Edition # 8 B

Radio / Tech Modifications

& Alignment Controls

1996N
6MQS

This Edition contains everything available including information contained in all previous Editions

Modifications for:

Alinco
Standard
Yaesu
Others
CB Radios

See back cover for specific radios

8B

Radio / Tech Modifications

Edition 8
Part B

1996N
6MQS

artsci

8B

P.O. Box 1428
Burbank, CA 91507
(818) 843-4080
(818) 846-2298 FAX
artsci@artscipub.com
http://www.earthlink.net/~artsci

Radio / Tech Modifications

EDITION 8B

96 97 98 99 10 9 8 7 6 5 4 3 2

ISBN 0-917963-18-0 $19.95

Notice of Liability

The information in this book is distributed on an "AS IS" basis, without warranty. Neither the author nor artsci inc shall have any liability to the customer or any other person or entity with respect to any liability, loss, or damage caused or alleged to be caused directly or indirectly by the information contained herein. This includes, but is not limited to, interruption of service, loss of use, loss of business or anticipatory profits, or consequential damages from the information in this book.

artsci inc, books are available for bulk sales at quantity discounts. For information, please contact Marketing Manager, artsci inc, P.O. Box 1428, Burbank, CA 91507
FAX: (818) 846-2298

Artsci may be contacted in the INTERNET

email - artsci@artscipub.com
URL - http://www.earthlink.net/~artsci

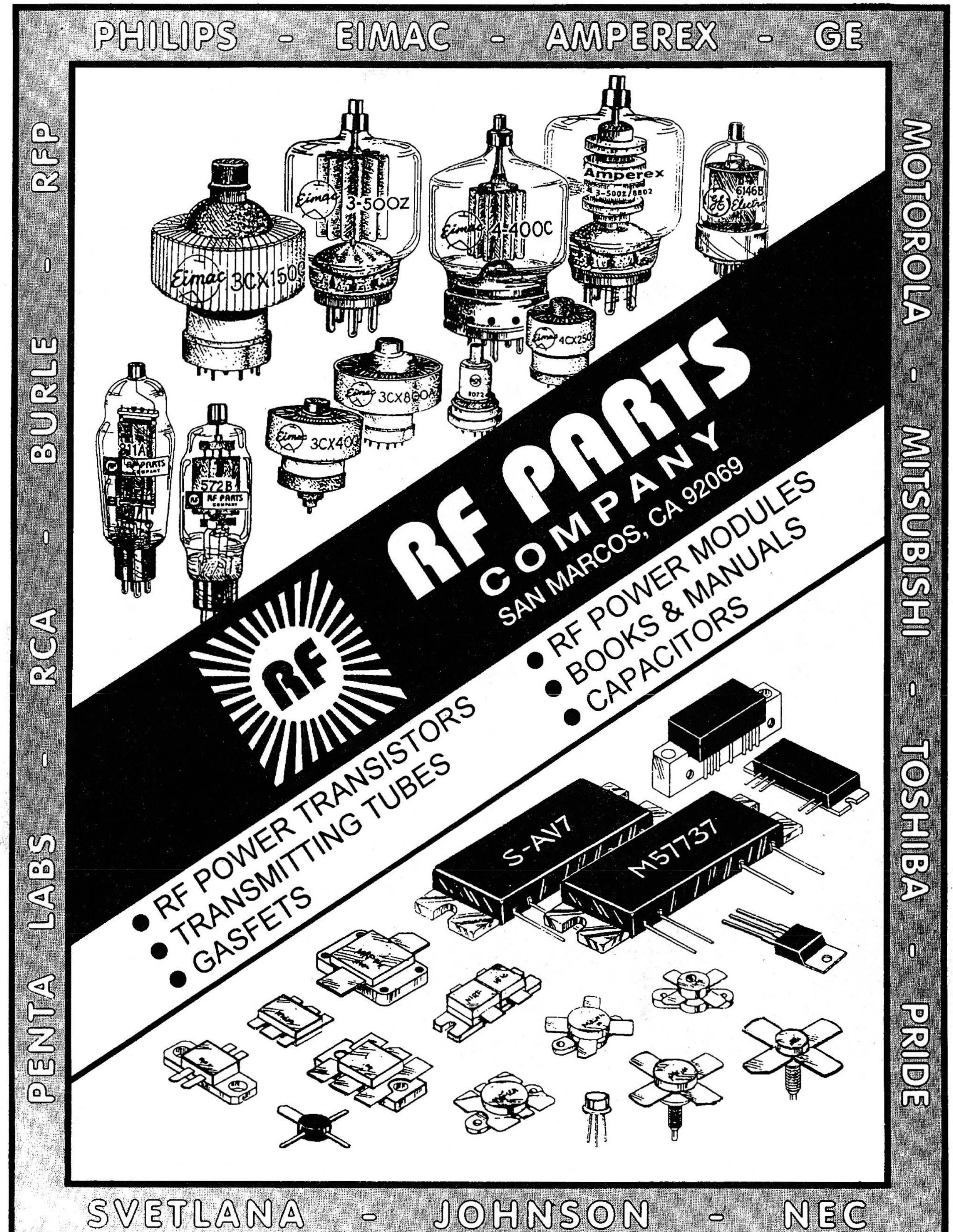
artsci

Contents

Amateur Radios (by manufactures)

CB Radios

artsci


PHILIPS - EIMAC - AMPEREX - GE
MOTOROLA - MITSUBISHI - TOSHIBA - PRIDE
SVETLANA - JOHNSON - NEC
PENTA LABS - RCA - BURLE - RFP
RF PARTS COMPANY
SAN MARCOS, CA 92069
• RF POWER TRANSISTORS
• TRANSMITTING TUBES
• GASFETS
• RF POWER MODULES
• BOOKS & MANUALS
• CAPACITORS
3-500Z
4-400C
3CX1500
Amperex
6146B
4CX250
3CX800A
3CX400
572B
S-AV7
M57737

Introduction

THERE ARE 2 BOOKS IN THIS EDITION SET. AN ORDER FORM FOR THE OTHER BOOK IS AVAILABLE IN THE BACK OF THIS BOOK.

The newest versions of RADIO/TECH MODIFICATIONS is Edition 8, part A (8A) Edition 8, part B (8B). Edition 8A contains all known modifications for ICOM and Kenwood Radios and mods for the popular scanners. Edition 8B has all the modifications for Yeasu, Alinco, Standard, Azden, KDK, Ten Tec, Ranger, Uniden, Radio Shack and popular CB radios.

During the past 6 years we have created 8 Editions of Radio/Tech modifications. Each new edition included the information contained in the previous editions. So if you have the current edition, you do not need to purchase the previous ones.

We make every effort to improve the illustrations with each new edition. The modifications presented here have been performed by many people throughout the world. Unless the manufacturer changes the radio in some significant way, the modifications contained in this book are accurate and current.

We make every effort to provide all available modifications for every radio we can find. In some cases, additional information is available for a radio that can not be presented in the book. We try and keep this information on file and will provide it to verified owners of the current edition for a small fee. We also try to keep the cost of the modification books as low as possible. We ask that you do not photocopy pages from these books. We will support you however we can, however, if you call us we will ask that you have the book in your hands at the time of the call.

It was only logical that we start to include the alignment points for each of the radios. Since you are inside them performing the modification, it is a good time to adjust the Modulation and Power levels.

Phone Support and New Modifications

If you find a new radio is not listed in these pages, contact us and ask about it. We may have a copy that did not make the printing deadline. If you purchased the book and have sent in the proof of purchase form, we can make the new modification available to you.

We produce new editions of this book every November. If you have the most current edition, we will mail or FAX you any additional modification we may have available. Send us a note and request a copy of the modification. You **MUST** send in the proof of purchase form in the back of this book to receive phone or mail support.

Once we have a new edition available, you must purchase it before we can continue support on any new or revised modifications.

Your comments and suggestions are always welcome. If the modification works great, let us know. If you can't make the modification work, let us know. We can't test every modification, we don't have all the radios. Your help will make the next volumes better for everyone.

A good percentage of our modifications come from people just like you. They may discover the modification themselves or talked someone into sending a copy of the manufacturers modification sheet.

When you help us find or improve a modification, we often say thank you with no charge copies of our books. Let's work together to create a high quality book that everyone can use.

Radio / Tech Modifications

Edition 8
Part B



8B

artsci

P.O. Box 1428
Burbank, CA 91507
(818) 843-4080
(818) 846-2298 FAX
artsci@artscipub.com
http://www.earthlink.net/~artsci

Radio / Tech Modifications

EDITION 8B

96 97 98 99 10 9 8 7 6 5 4 3 2

ISBN 0-917963-18-0 $19.95

Notice of Liability

artsci inc, books are available for bulk sales at quantity discounts. For information, please contact Marketing Manager, artsci inc, P.O. Box 1428, Burbank, CA 91507
FAX: (818) 846-2298

Artsci may be contacted in the INTERNET

email - artsci@artscipub.com
URL - http://www.earthlink.net/~artsci

artsci

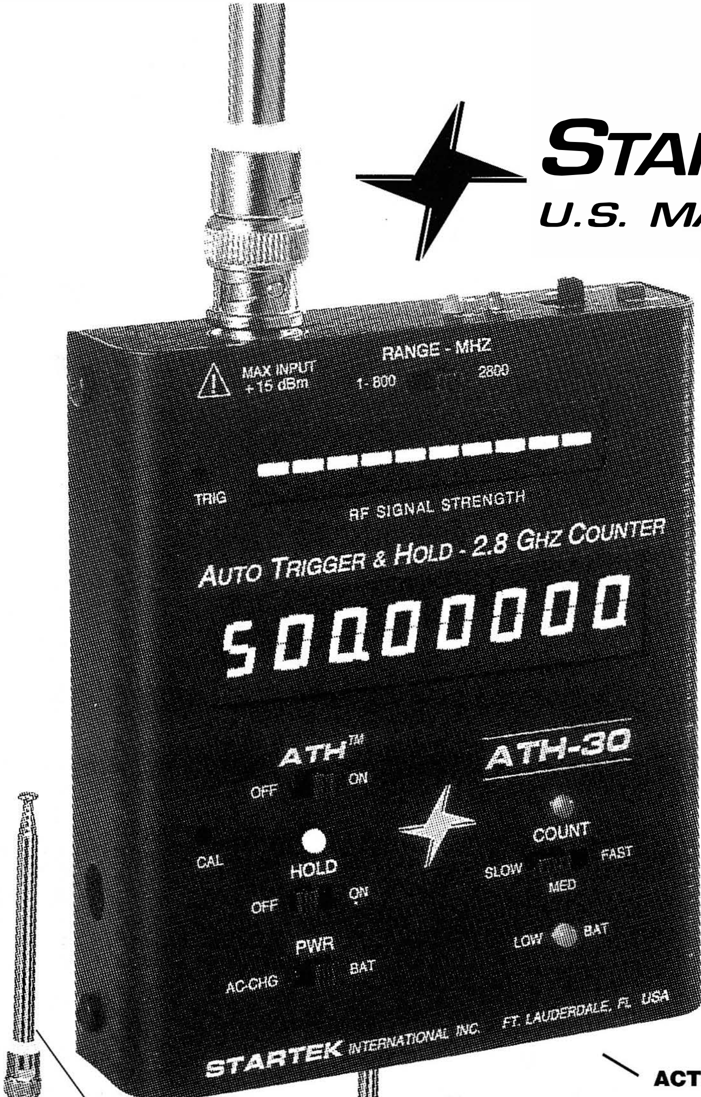
Contents

Amateur Radios (by manufactures)

CB Radios

artsci

STARTEK INTERNATIONAL INC.
U.S. MADE FREQUENCY COUNTERS



FAST and CONVENIENT, RELIABLE and COMPACT describe the *STARTEK ATH™* series, *Auto Trigger & Hold* Frequency Counters.

USE to find unknown frequencies, locate RF sources, check equipment for operation and frequency calibration. Use with antenna analyzers for antenna tuning, monitor the output frequency of transmitters, signal generators and more.

POCKET SIZE for convenient portable use – internal Ni-Cad batteries and AC charger/adapter are included.

EASY to use–no complicated or multi-function switches.

BRIGHT red LED digits for excellent readability and reliability.

BAR GRAPH indicating signal strength, on most models.

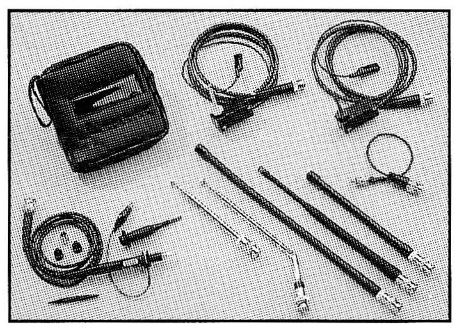
PREAMPLIFIER circuits are built into all *ATH™* series counters for maximized – *Ultra High Sensitivity*.

5 YEAR all parts and 1 year labor limited factory warranty.

U.S. made and very affordable – ***PRICES START UNDER $120***.

ACTUAL SIZE





FEATURES	ATH-10 CALL reg $179	ATH-15 CALL reg $235	ATH-30 CALL reg $299	ATH-50 CALL reg $339
FREQUENCY RANGE	1 MHZ - 1200 MHZ	1 MHZ - 1500 MHZ	1 MHZ - 2800 MHZ	5 HZ - 2800 MHZ
AUTO TRIGGER & HOLD	YES	YES	YES	YES
SIGNAL BAR GRAPH	NO	YES	YES	YES
LOW BATTERY IND.	NO	YES	YES	YES
ONE-SHOT & RESET	NO	OPTIONAL	YES	YES
HI-Z LOW RANGE	NO	NO	NO	YES

OPTION #HST-15 is a high accuracy, high stability, time base upgrade that can be ordered with any *ATH™* series model (±0.2PPM TCXO)....................reg. ~~$125~~ **$100**

BAND PASS FILTERS EXTEND READABILITY DISTANCE. **Call For Price**

#LP-60 DC - 60 MHZ
#HP-400 400 - 1500 MHZ
#BP-150 130 - 500 MHZ
#HP-800 800 - 2000 MHZ

All instruments are true Pocket Size: 4" H x 3.5" W x 1" D shipped with factory installed Ni-Cad batteries and AC charger/adapter.

Antennas and various accessories are optional.

ACCESSORIES

#CC-90	Soft Case for All Models	$12
#TA-90	Telescope BNC Antenna	12
#TA-90-L	Telescope Elbow BNC Antenna	16
#RD-150	150 MHZ Rubber Duck Antenna	16
#RD-2750	27 & 50 MHZ Rubber Duck Antenna	19
#RD-450	450 MHZ Rubber Duck Antenna	16
#RD-800	Cellular phone band RD Antenna	16
#P-110	200 MHZ 1X-10X Probe	39
#LP-22	Low Pass, Audio Probe	25
#DC-10	Direct, 50 OHM Probe	20
#DC-5	BNC Cable to Clip Leads	12
#M-207-IC	Interface Cable MFJ Ant. Analyzers	10
#APA-9	9VDC Auto Power Adapter	6

Call STARTEK Direct or your Dealer for Special Pricing
FACTORY DIRECT ORDER LINES:
Orders & Information 305-561-2211
Orders Only 800-638-8050

STARTEK INTERNATIONAL INC.
398 NE 38th St., Ft. Lauderdale, FL 33334

MasterCard VISA DISCOVER

Terms: Shipping/handling charges U.S. & Canada 5% ($5 min., $10 max) Others add 15%. FL residents add tax. COD fee $5.
Prices & specifications subject to change without notice or obligation.

Introduction

THERE ARE 2 BOOKS IN THIS EDITION SET. AN ORDER FORM FOR THE OTHER BOOK IS AVAILABLE IN THE BACK OF THIS BOOK.

The newest versions of RADIO/TECH MODIFICATIONS is Edition 8, part A (8A) Edition 8, part B (8B). Edition 8A contains all known modifications for ICOM and Kenwood Radios and mods for the popular scanners. Edition 8B has all the modifications for Yeasu, Alinco, Standard, Azden, KDK, Ten Tec, Ranger, Uniden, Radio Shack and popular CB radios.

During the past 6 years we have created 8 Editions of Radio/Tech modifications. Each new edition included the information contained in the previous editions. So if you have the current edition, you do not need to purchase the previous ones.

We make every effort to improve the illustrations with each new edition. The modifications presented here have been performed by many people throughout the world. Unless the manufacturer changes the radio in some significant way, the modifications contained in this book are accurate and current.

We make every effort to provide all available modifications for every radio we can find. In some cases, additional information is available for a radio that can not be presented in the book. We try and keep this information on file and will provide it to verified owners of the current edition for a small fee. We also try to keep the cost of the modification books as low as possible. We ask that you do not photocopy pages from these books. We will support you however we can, however, if you call us we will ask that you have the book in your hands at the time of the call.

It was only logical that we start to include the alignment points for each of the radios. Since you are inside them performing the modification, it is a good time to adjust the Modulation and Power levels.

Phone Support and New Modifications

If you find a new radio is not listed in these pages, contact us and ask about it. We may have a copy that did not make the printing deadline. If you purchased the book and have sent in the proof of purchase form, we can make the new modification available to you.

We produce new editions of this book every November. If you have the most current edition, we will mail or FAX you any additional modification we may have available. Send us a note and request a copy of the modification. You **MUST** send in the proof of purchase form in the back of this book to receive phone or mail support.

Once we have a new edition available, you must purchase it before we can continue support on any new or revised modifications.

Your comments and suggestions are always welcome. If the modification works great, let us know. If you can't make the modification work, let us know. We can't test every modification, we don't have all the radios. Your help will make the next volumes better for everyone.

A good percentage of our modifications come from people just like you. They may discover the modification themselves or talked someone into sending a copy of the manufacturers modification sheet.

When you help us find or improve a modification, we often say thank you with no charge copies of our books. Let's work together to create a high quality book that everyone can use.

Scanner Modification Problems

In 1993 the FCC created some new rules about scanners and the frequencies they may receive. (SEE the section Modifications and the law, below)

The Manufactures were forced to modify all versions of their scanners to comply with the new law. The modifications that worked on the old versions no longer work on the new versions.

Most of the modification presented here work on the older versions but not on the new ones. We have found some of the new modifications and have presented them in this book. As more become available, we will include them in future editions.

We expect that the manufactures have a modification available for the new versions, but are not releasing it to anyone. If they locked out any modification, they will only be hurting their own future sales.

If you have a problem with a modification, let us know and we will make any new information available to you.

If you purchased one of these scanners, write a letter to the manufacturer and express your personal dissatisfaction. If they get enough letters and complaints they may think twice before limiting their products in the future.

If you need a scanner that can be modified, contact a dealer in another country like Canada and purchase one there. It may cost you a bit more.

Your other option is to purchase an amateur radio receiver. These receivers will be more expensive, but will outperform any other retail scanners.

Cellular Phone Bands

The Federal Communications Commission (FCC) is the agency in charge of controlling the airwaves in the United States. It has been their responsibility to oversee the content of the transmissions from broadcasters in the United States.

On April 26, 1993, the FCC decided that they should not only control what information is broadcast on the airwaves, they should also control the sale of radios capable of receiving certain frequencies.

The issue in this decision is protecting the privacy of cellular phone users. The Cellular phone frequency band in the upper 800 MHz range has become a favorite scanner listening band. The cellular users deserve their privacy. Hence, the FCC has declared a ban on all scanner style radios or converters capable of receiving the cellular band.

The wording of the new law is intended to regulate what type of receivers may be sold in the United States.

Section 15.121 Scanning receivers and frequency converters designed or marketed for use with scanning receivers.

(a) Except as provided in paragraph (b), scanning receivers, and frequencies converters designed or marketed for use with scanning receivers, must be incapable of operating (tuning), or readily being altered by the user to operate, within the frequency bands allocated to the domestic Public Cellular Radio Telecommunications Service in part 22 of this chapter (cellular telephone bands). Receivers capable of "readily being altered by the user: include, but are not limited to, those for which the ability to receive transmissions in the cellular telephone bands can be added by clipping the leads of, or installing, a simple component such as a diode, resistor and/or jumper wire; replacing a plug-in semiconductor chip; or programming a semiconductor chip using special access codes or an external device, such as a personal computer. Scanning

receivers, and frequencies converters designed or marketed for use with scanning receivers, must also be incapable of converting digital cellular transmissions to analog voice audio.

(b) Scanning receivers, and frequency converters designed or marketed for use with scanning receivers, that are manufactured exclusively for, and marketed exclusively to, entities described in 18 U.S.C. Section 2512 (2) are not subject to the requirements of paragraph (a).

It seems apparent that the FCC is attempting to protect the cellular phone users' privacy. The Cellular industry is also taking reasonable precautions to protect their users with their new digital technology. Perhaps after digital takes over, the FCC will relax or repeal the rule.

Transmitting out of band

The Federal Communications Commission (FCC) has another set of rules that controls the type of transceivers approved for use in the United States. The purpose is to make sure that transmissions are clean and do not cause interference or emissions on other frequencies.

The FCC has special relaxed rules for Amateur equipment that help to encourage lower pricing for transceivers. The FCC will approve a radio for use only in the Amateur frequency range, but the same radio may be refused for use in the Business band.

Use of a Amateur approved radio to transmit outside the amateur band is illegal no matter what type of license you have, (MARS & CAP do have a permission to exceed the limits by 3-4 MHz).

No discussion about transmission on the Police bands is needed here. It is illegal and wrong and can cause loss of Human life. If you know of anyone doing it, turn them in.

Surface Mount Components

Many of the modifications presented in this text require you to remove Surface mount components.

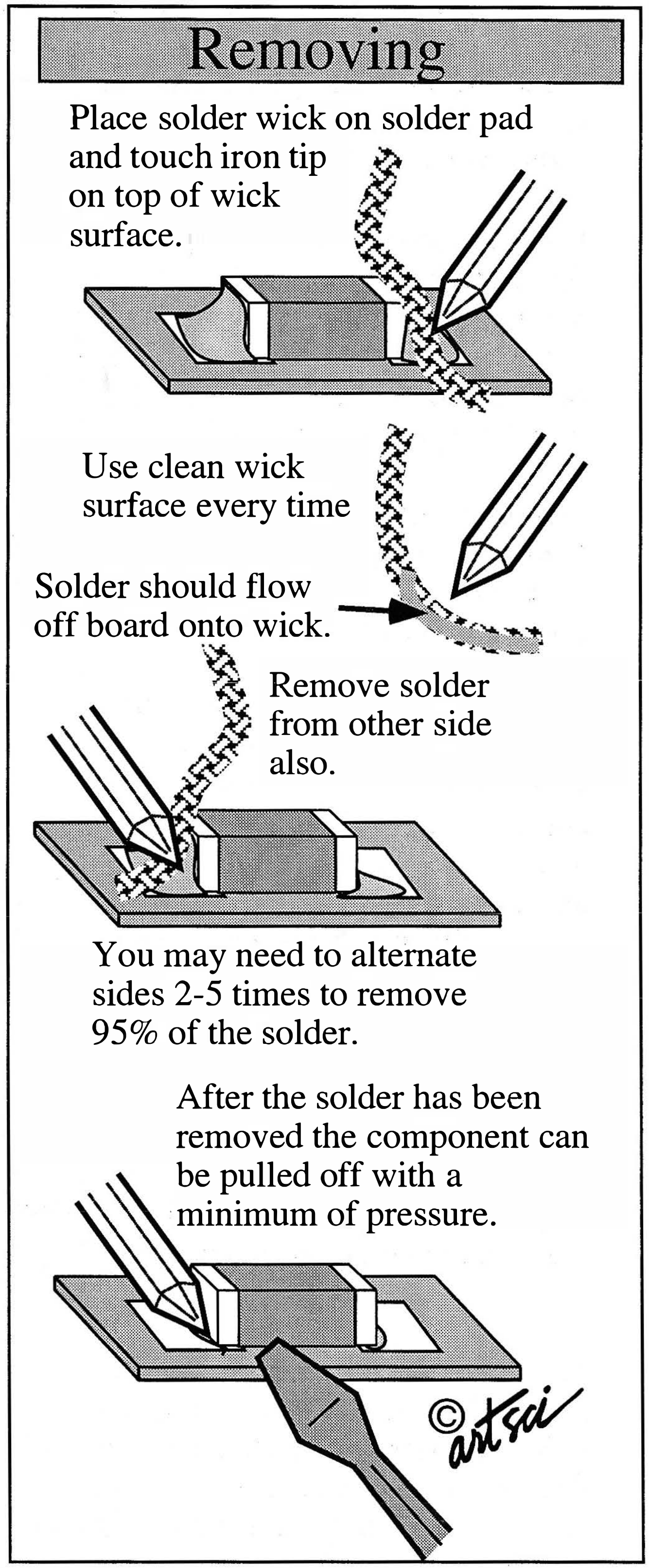
Surface mount components come in various configurations, starting with large microprocessors all the way down to single diode packages. You will even find that single diodes and resistors come in different sizes.

Some of these modifications use very small packages with three leads. About a year ago I ordered 50 of a popular package and accidentally dropped them on the carpet, I lost 20 of them because I couldn't find them!!

You will find that with a little care and the proper tools, you will be able to remove the components.

I suggest solder wick as the best method to remove the solder, some people prefer a solder sucker. This is of course assuming that you do not have access to a desoldering station ($3,000 plus).

Exercise a little caution to insure that you do not overheat the circuit board. Damaging the circuit board is the most expensive accident you can have.



Excess heat can lift the circuit board traces right off the board. A small section might stick to the soldering iron and you might not notice until you discover the radio won't work.

Caution must be taken to protect the component also (if you will need it again). Remove a little solder and move to the other side of the component. After 2-5 times the part will pop off!!

Installing components is easier than removing them. Excess heat during installation should also be avoided.

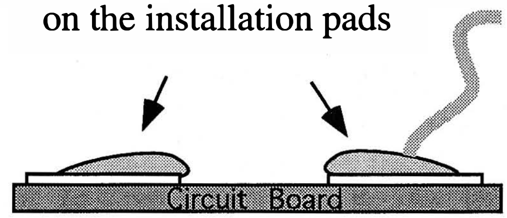
Place a small amount of solder on the circuit board pads before you attempt to install the component. This will allow you to place the part in position and use the iron to melt the solder and it will attach the component in place.

Remember to hold the component in place using a blunt tool or screwdriver. Small surface mount components seem to jump right off the board and glue themselves to a soldering iron.

To test if a component is properly attached, use a volt/ohmmeter. Attach a lead to the trace on the circuit board and make sure that continuity is present.

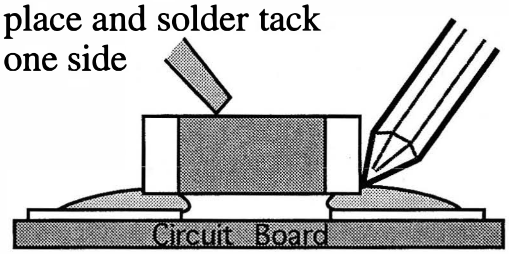
Installing

Place a small amount of solder on the installation pads



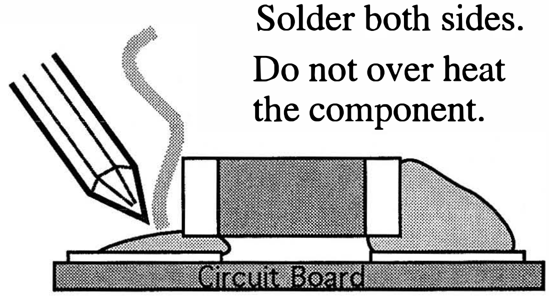
Place the component on the board

Hold the component in place and solder tack one side



Solder both sides.

Do not over heat the component.



Solder should be smooth and fully bonded to the component

- Some technicians perfer to use a solder sucker to remove solder.
- Components can be damaged by excess heat.
- Components may adhere themselves to the tip of the soldering iron if not held in place.

Chip Diode Package Layouts

Many of the modifications presented in this text require you to remove or install surface mount components.

Some of these modifications use very small packages with three leads. About a year ago I ordered 50 of a popular package and accidentally dropped them on the carpet, I lost 20 of them because I couldn't find them!!



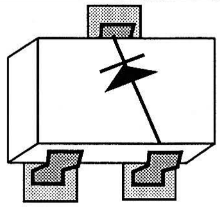
Actual Size of a
Chip Diode Package

These components are available directly from the radio manufacturers' parts department.

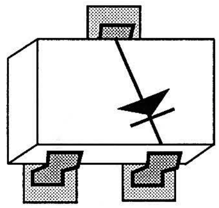
Some experienced technicians may elect to use separate 1N914 diodes in place of these diode packages.

The only problem with using 1N914 diodes is that the are 3-4 times larger than the diode package and may not fit properly.

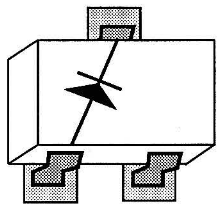
However, here are the diode package layouts for the popular packages.



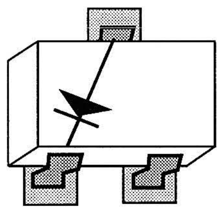
DA115 (symbol: AU)
1SS196 (symbol: G3)



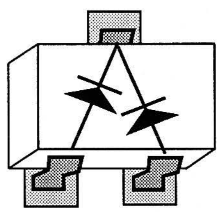
1SS190 (Symbol: E3)



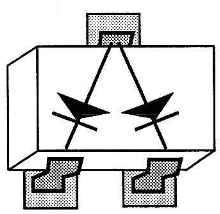
DA114
1SS193 (symbol: F3)



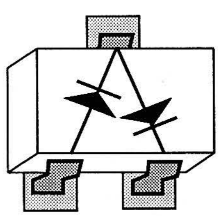
1SS187 (Symbol: D3)



MA132WK (symbol: MU)
1SS184 (symbol: B3)
DAN202U (symbol: N)



1SS181 (symbol: A3)



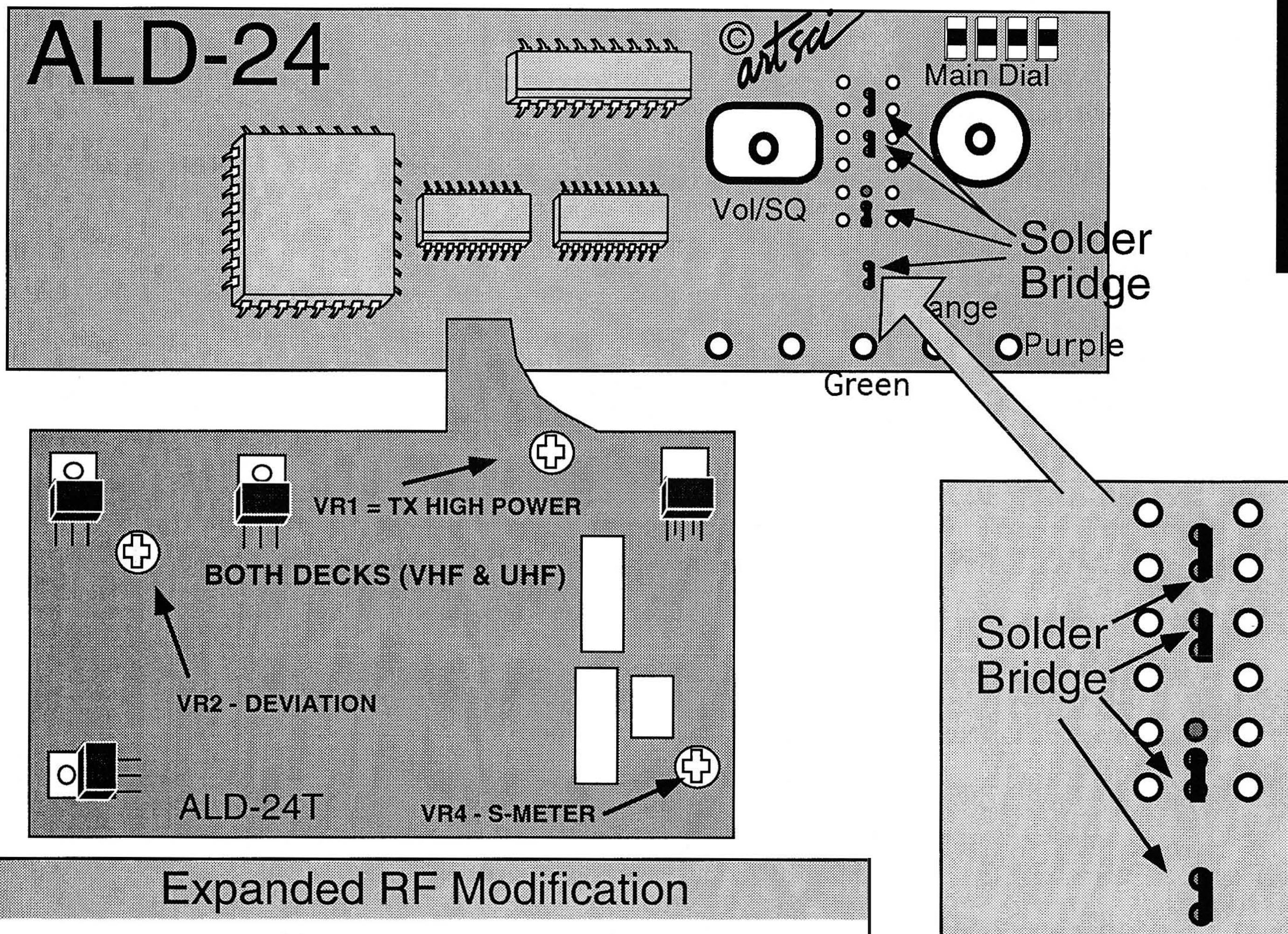
DA133 (symbol: MP)
DA204U

Alinco Radio Modifications

Notes

Expansion Range

The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

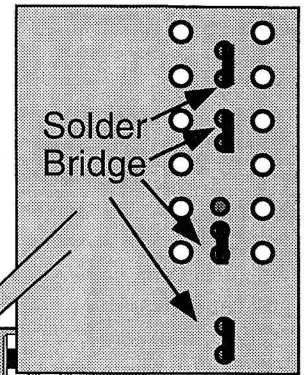
1. Remove Battery and Antenna.
2. Remove top and bottom covers.
3. Remove Main dial, Vol & SQL knobs. Remove the retaining rings.
4. Remove front cover to access front panel circuit board.
5. Solder bridge four sets of pads as shown.
6. Reassemble radio.
7. Reset microprocessor (Press reset button)

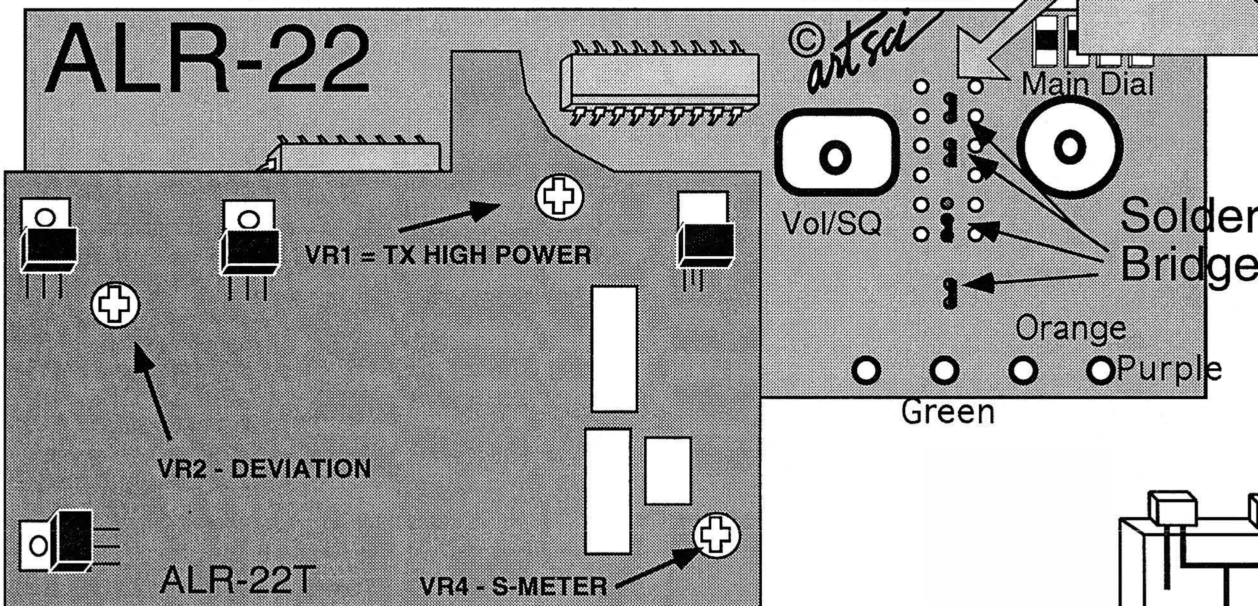
(818) 843-4080 12-4 PST, Fax:(818) 846-2298

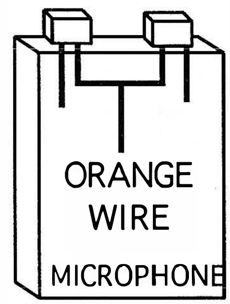
ALR-22R

Expansion Range

The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.







Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove top and bottom covers.
3. Remove Main dial, Vol & SQL knobs. Remove the retaining rings.
4. Remove front cover to access front panel circuit board.
5. **Solder bridge pads as shown.**
6. Reassemble radio

Microphone Modification

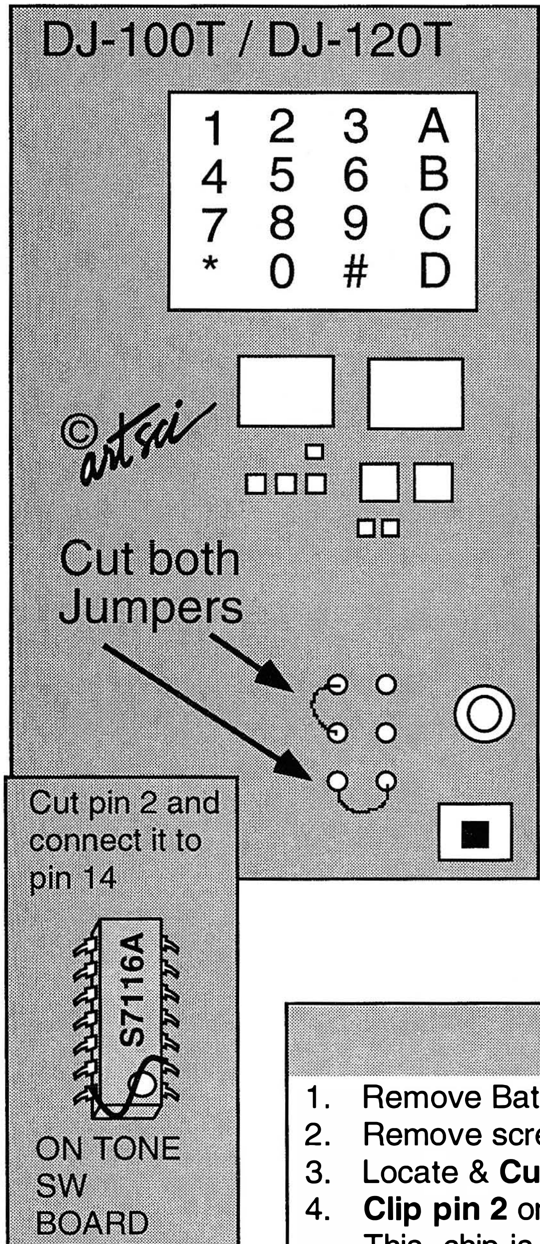
1. Open radio as described above.
2. Locate and remove the Microphone Green, Orange & Purple wires.
3. **Solder the wires as shown in drawing**
4. Reassemble radio.
5. Open Microphone.
6. **Remove the Ground side of the Up/Down buttons and tie them together.**
7. **Connect the Orange wire to the two tied wires.**
8. Reassemble Microphone.

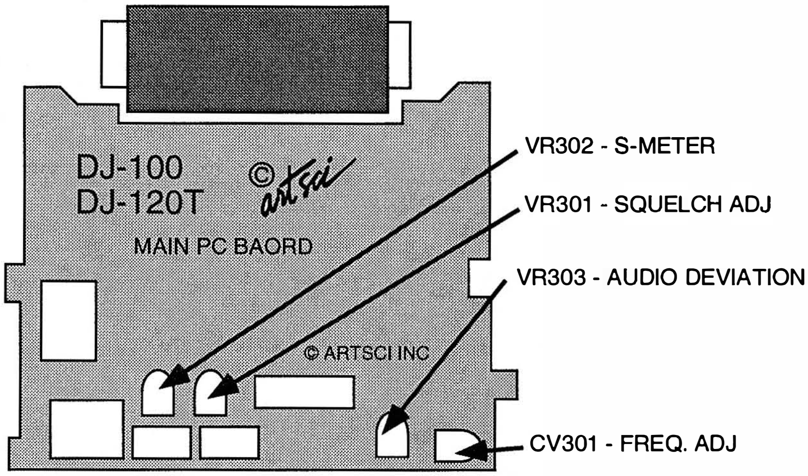
(818) 843-4080 12-4 PST, Fax:(818) 846-2298

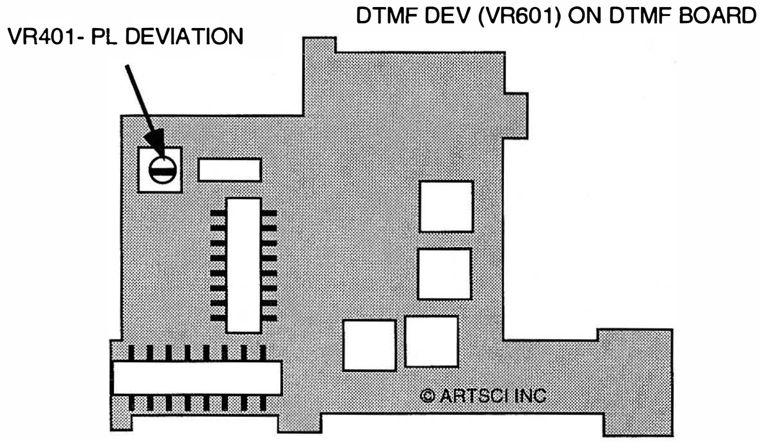
Receive and Transmit Expansion

Expansion Range

The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.







Expanded RF Modification

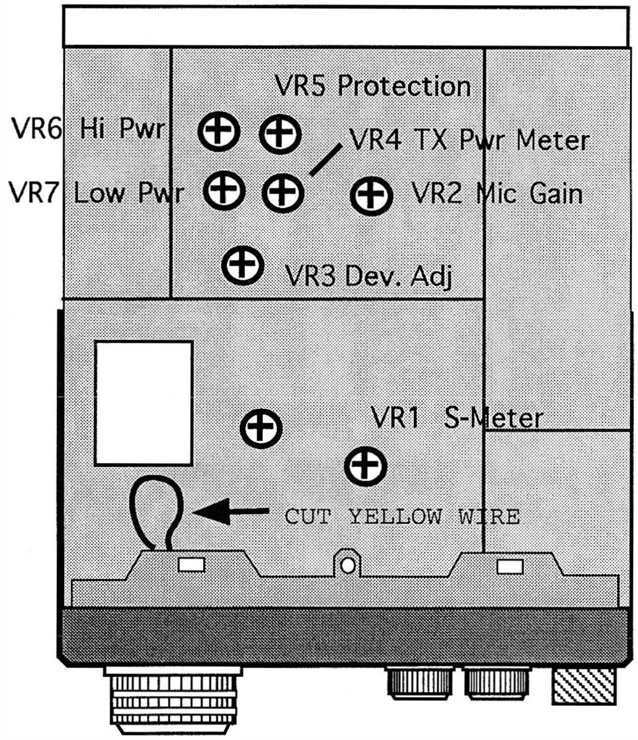
1. Remove Battery and Antenna.
2. Remove screws from case and open radio.
3. Locate & **Cut Jumpers per drawing.**
4. **Clip pin 2** on IC401(S7116A) and connect it to pin 14 (for simplex PL tone) This chip is located on the TONE SW board.
4. Reassemble radio.
5. Reset the Micro Processor.

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Transmit Expansion

Expansion Range

The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



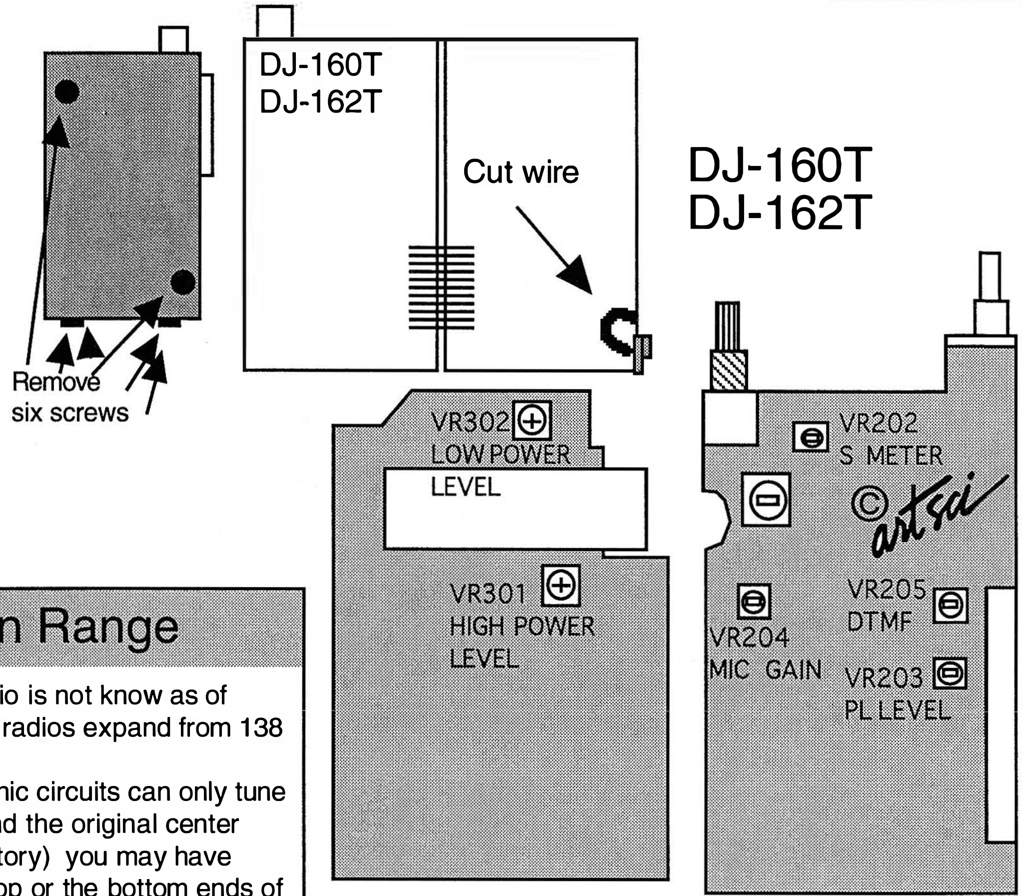
VR1 on Tone squelch board the PL Level

One Report states the Yellow wire was Blue in color!

Expanded RF Modification

1. Remove Power and Antenna.
2. Remove screws from top case and open radio.
3. **Cut the yellow wire** on the control board.
4. Reassemble radio
5. **Reset microprocessor.**
   (Tum radio on. Press and hold [F] and [VFO/M] and tum power off and while still holding keys, tum power back on.

(818) 843-4080 12-4 PST, Fax:(818) 846-2298



Expansion Range

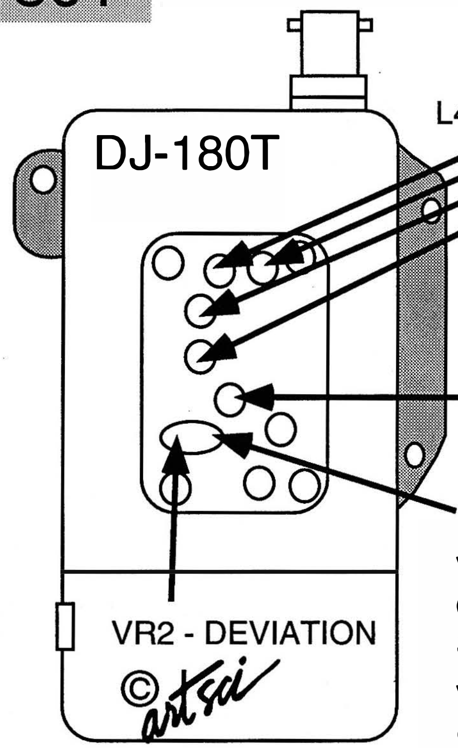
The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove 2 screws back of case and four screws from battery slide clip.
3. Remove Main dial, Vol & SQL knobs. Remove the retaining rings.
4. Remove the top cover.
5. Open radio.
6. Locate and **cut yellow wire** behind the battery release button.
7. Reassemble radio.
8. **Reset microprocessor.** (Press and hold [F] key and tum power on.)

DJ-162 AM Mode RX: In VFO Press [B]

Receive and Transmit Expansion



VR401 - DTMF DEV LEVEL ON DTMF UNIT ABOVE SPEAKER.

VR701 - PL TONE DEV LEVEL ON CTCSS UNIT

Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove the four screws holding the battery slide plate in location.
   (Careful not to break the battery plate wires)
3. Locate and **cut the "PINK" wire**. (Only the PINK wire)
4. Reassemble the unit.
5. **Reset the microprocessor**
   (Press and hold the [FUNC] & [LAMP] button and tum the power on.)

Optional Receive only mod: (130 - 173 MHz)

1. Reset the microprocessor
   (Press and hold the [LAMP] button and tum the power on.)

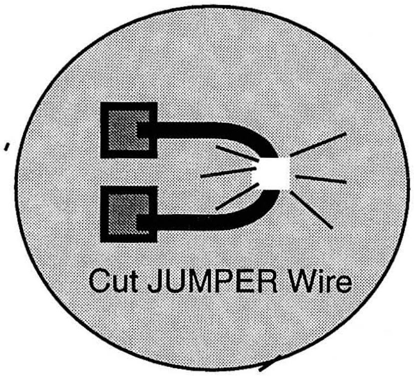
Expansion Range

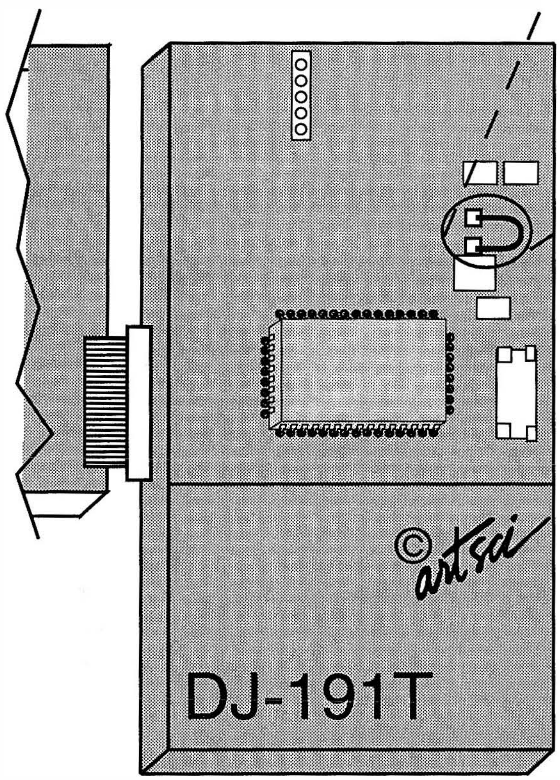
The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

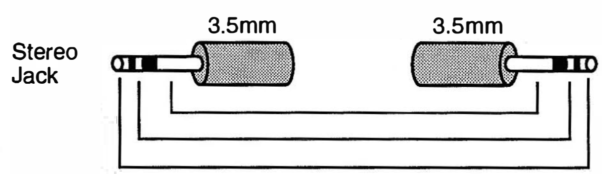




Cable Cloning

The entire memory and VFO contents may be copies from one DJ-191T to another DJ-191T.

1. Connect speaker jacks together using an interface cable.
2. Tum on both radios.
3. Press and hold [MONI] and press the [PTT] key three times on both radios. ("CLONE will appear)
4. Press [MONI] on the slave radio. (the one that gets the information and "READY": will appear)
5. Press [PTT} on the master radio. ("PUSH" will appear on the display.)
6. Press [PTT] again to start the copy.
7. "END" will appear when the task is complete.
8. Tum off both radios.
9. Remove the cable.



Expanded RF Modification

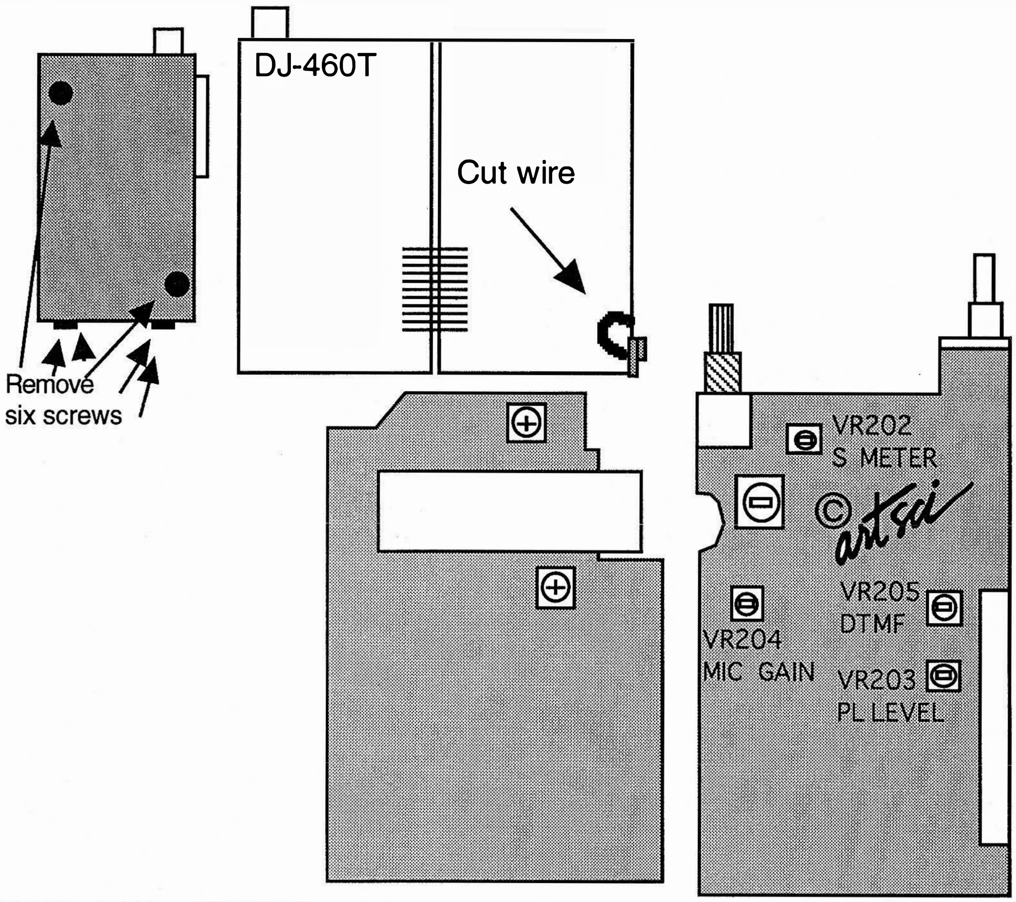
1. Remove battery and antenna.
2. Removefour screws on the back cover
3. Open the radio carefully to avaid damage to the ribbon cable.
4. Locate and **cut the "JUMPER" wire.**
5. Reassemble the radio.
6. **Reset the microprocessor.**
   (Press and hold [FUNC] and turn power on)

Receive and Transmit Expansion

Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

DJ-460



Expanded RF Modification

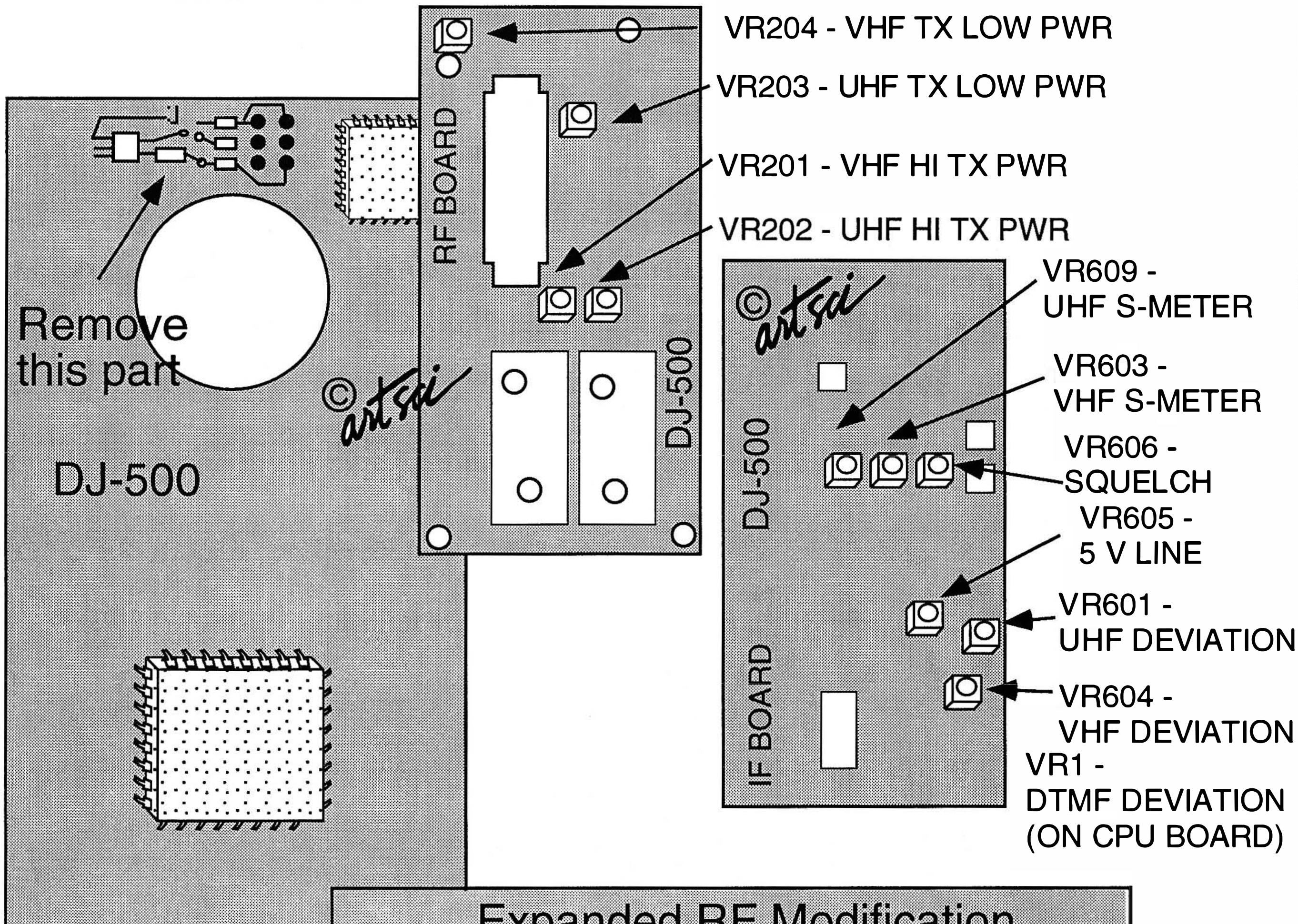
1. Remove Battery and Antenna.
2. Remove 2 screws back of case and four screws from battery slide clip.
3. Remove Main dial, Vol & SQL knobs. Remove the retaining rings.
4. Remove the top cover.
5. Open radio.
6. Locate and **cut wire behind the battery release button.**
7. Reassemble radio.
8. **Reset microprocessor.** (Press and hold [F] key and turn power on.

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Transmit Expansion

Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

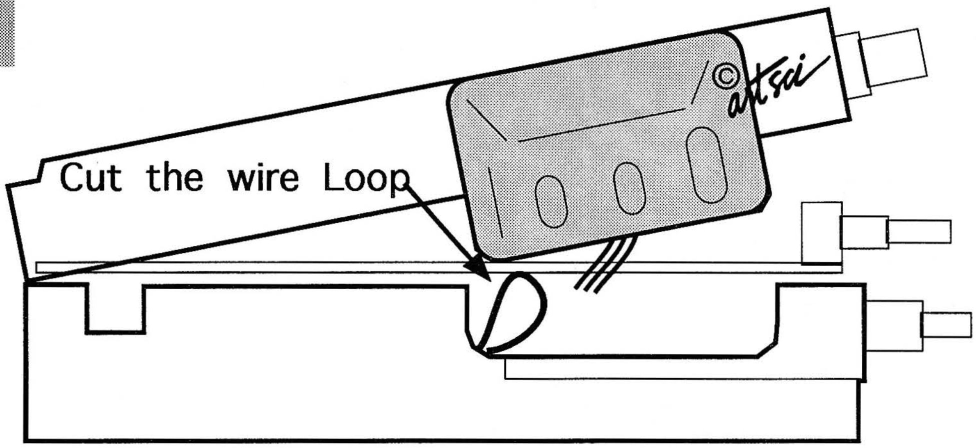


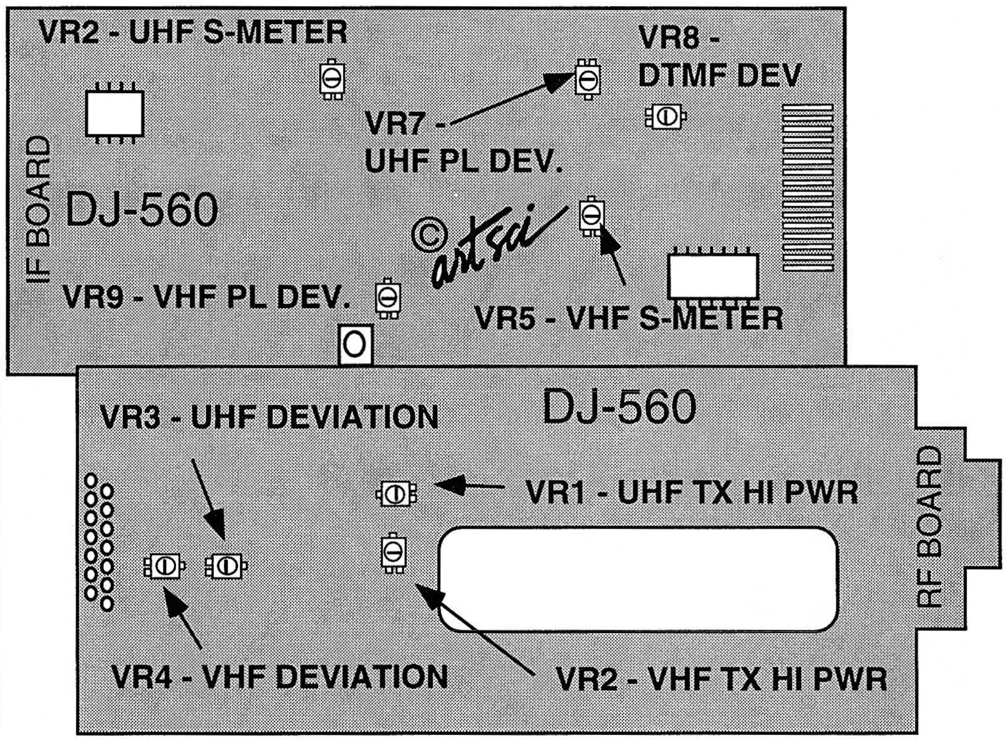
Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove screws from case (3 Long & 2 short)
3. **Remove green component** per drawing.
4. Reassemble radio.
5. Reset the Microprocessor.
   (Reset switch is located below the PTT Switch)

Receive and Transmit Expansion

DJ-560





Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz. Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Expanded RF Modification

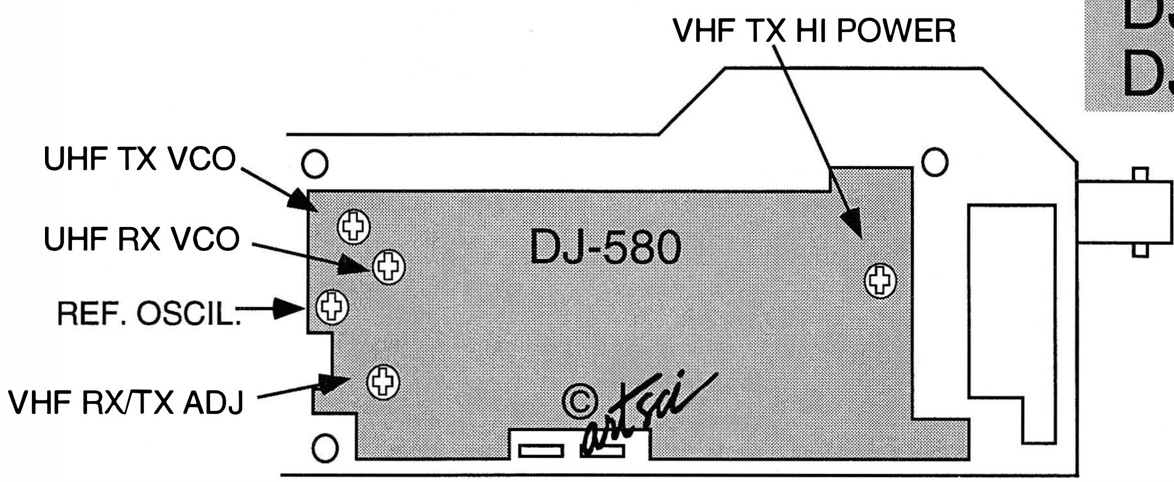
1. Remove battery and antenna.
2. Remove screws from back of case and.
3. Remove all 4 screws from battery plate.
4. Remove screw next to the BNC connector.
5. Remove the Dial, UHF and VHF knobs.
6. Unscrew the Lock rings under the Dial, UHF and VHF knobs.
7. Remove the top cover and the 4 screws holding the radio together.
4. Locate and **cut orange or Yellow wire** directly below the PTT switch.
5. Reassemble the radio.
6. **Reset the CPU**. (Press and hold [FUNCTION] and tum power on)

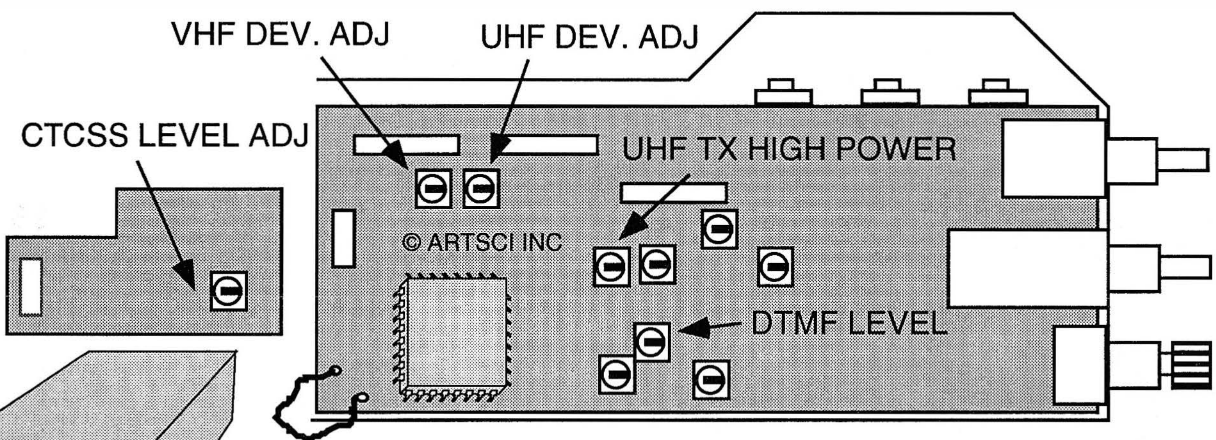
(818) 843-4080 12-4 PST, Fax:(818) 846-2298

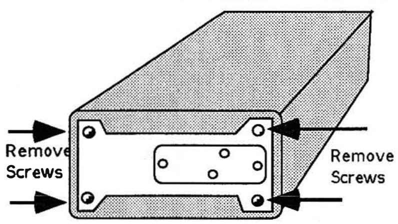
©artsci

Receive and Transmit Expansion

DJ-580T
DJ-582T







Expanded RF Modification

1. Remove battery and antenna.
2. Remove the four (4) screws on the bottom of the radio.
3. Remove the battery slide plate.
4. Locate and **CUT the BLUE wire** (for expanded RF)
5. Locate and **CUT the RED wire** (for aircraft and 800 MHz RX.
   DJ-582T Has no RED wire and no 800 MHz RX. Air band is standard)
6. Reassemble the radio.
7. **Reset the microprocessor.**
   (Press and hold the [FUNCTION] key and tum the radio on).

To Select the AIRCRAFT BAND
Press the [FUNCTION] and [VHF] key simultaneously.
The Letter "A" (AM mode) will appear on the display.
(press again to select the 2 meter band)

To Select the 800 MHz BAND (No 800 on DJ-582T)
Press the [FUNCTION] and [UHF] key simultaneously.
(press again to select the 440 MHz band)

Expansion Range

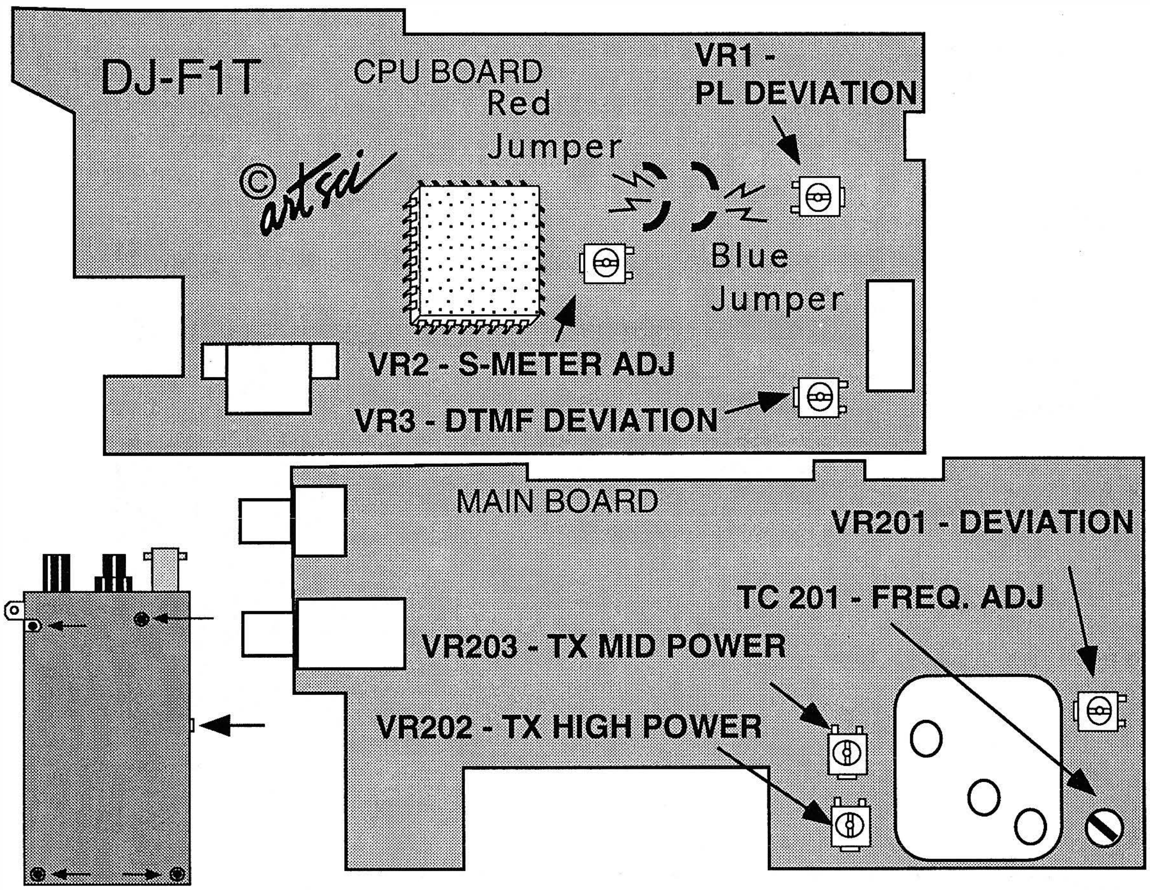
Air Band RX
800 MHz RX
130-175 MHz TX
410-475 MHz TX

ALINCO

Receive and Transmit Expansion

Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

1. Remove battery and antenna.
2. Remove 5 screws from the back of the case.
3. Slide and hold the Battery lock button open the radio carefully.
4. Locate and **cut the RED jumper wire.** (AM airband reception)
5. Locate and **cut the BLUE jumper.** (Expanded RF)
6. Reassemble the radio.
7. **Reset the microprocessor.** (Press and hold the [F] key and turn the power on)

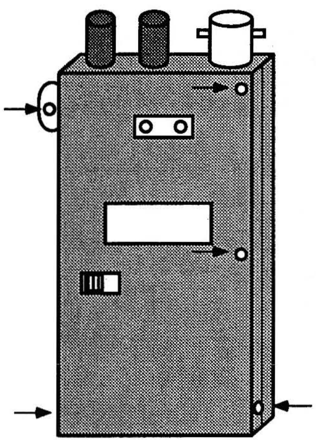
TURN ON/OFF AIRBAND:

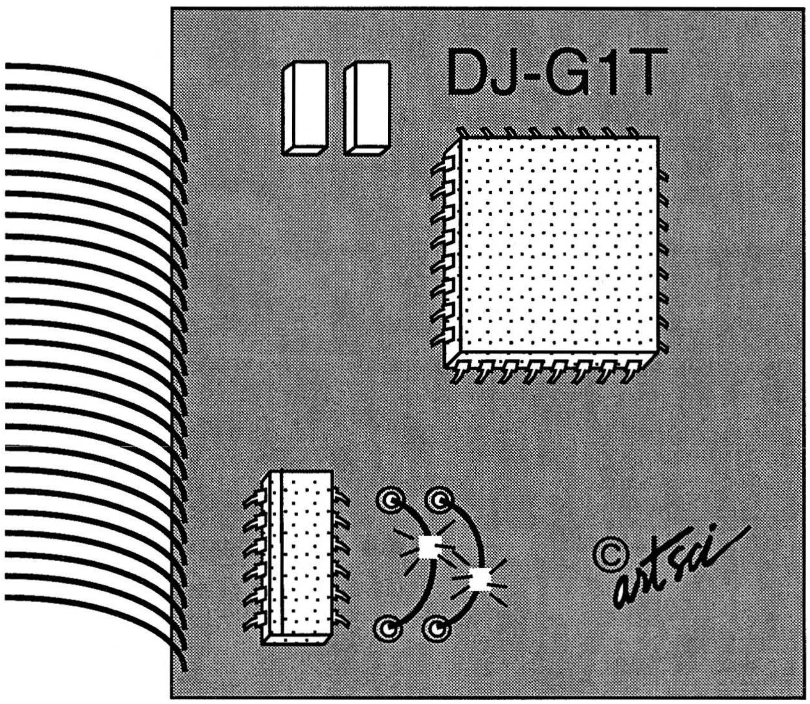
Press the [B] key. an "A" will appear on the display to indicate the AM mode is operating.

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.





Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove five screws from the back and carefully open the radio.
3. Locate and **cut the BLUE and RED wire loops** on the microprocessor board.
4. Reassemble the radio.
5. **Reset the microprocessor.** (Press and hold [FUNC] and turn the radio on)

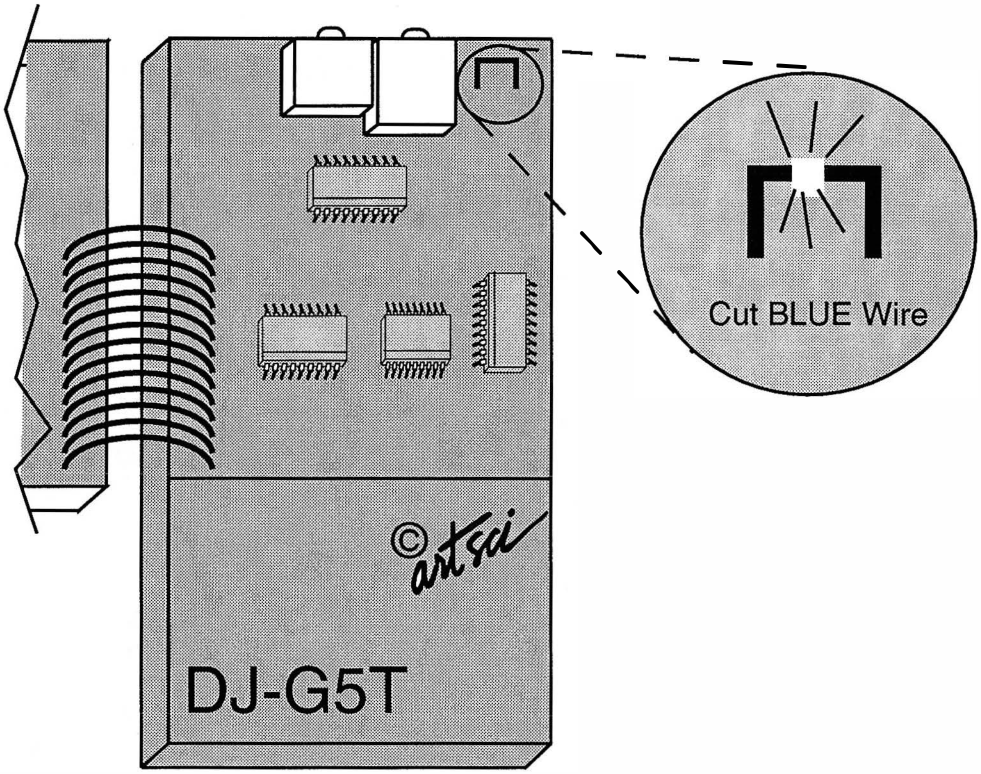
AM AIRBAND - Press [FUNC] & [Low PTT]

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Transmit Expansion

Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



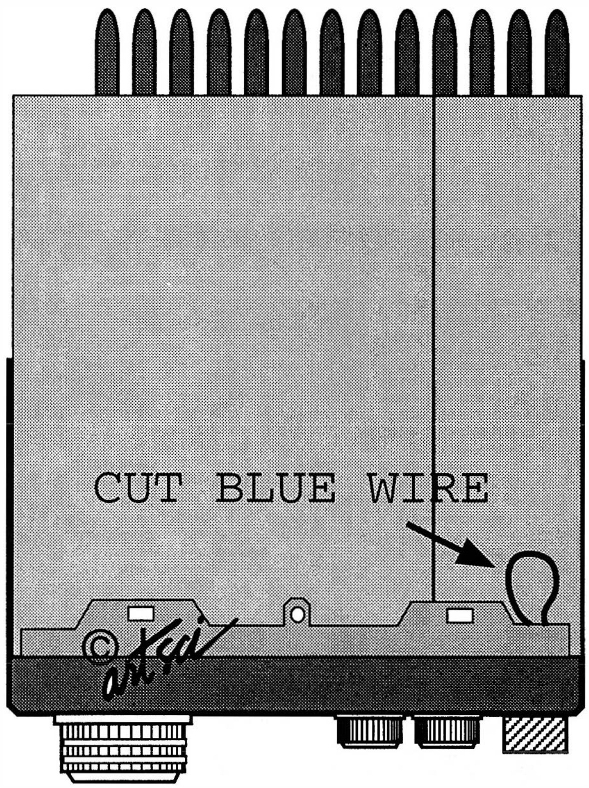
Expanded RF Modification

1. Remove battery and antenna.
2. Removefour screws on the back cover
3. Open the radio carefully to avaid damage to the ribbon cable.
4. Locate and **cut the "BLUE" wire.**
5. Reassemble the radio.
6. **Reset the microprocessor.**
   (Press and hold [FUNC] and tum power on)

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Expansion Range

The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



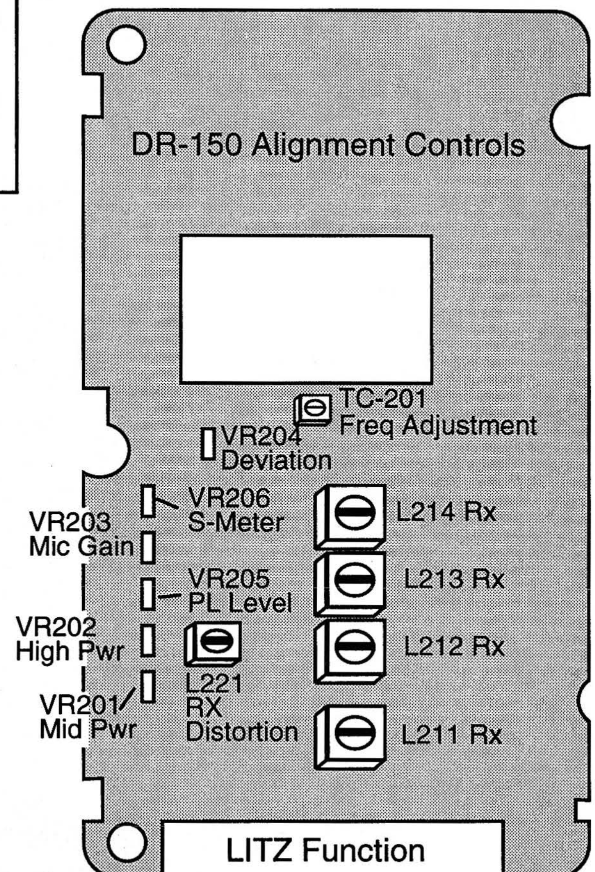
Expanded RF Modification

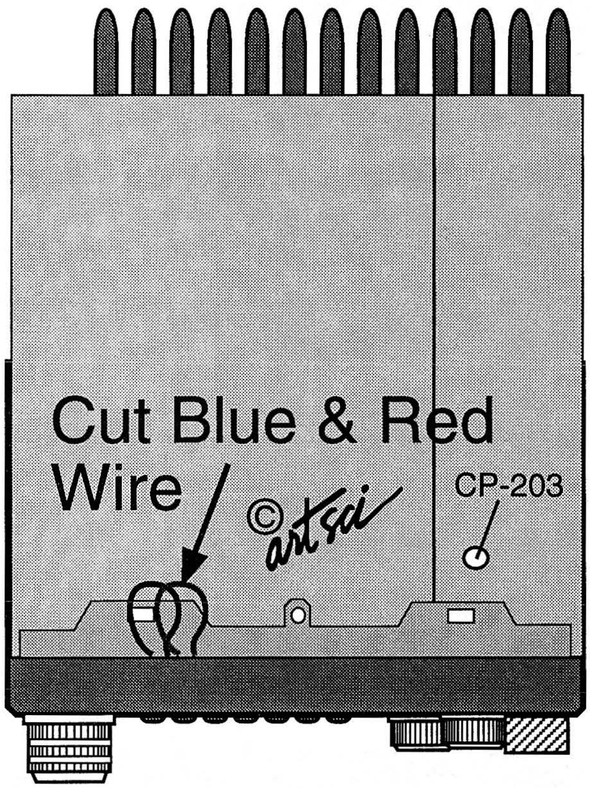
1. Remove power and Antenna.
2. Remove the top cover.
3. Locate and **cut the BLUE jumper wire.**
4. Reassemble the radio
5. **Reset the microprocessor.**
   (Press and hold the [FUNCTION] button and tum the radio on)

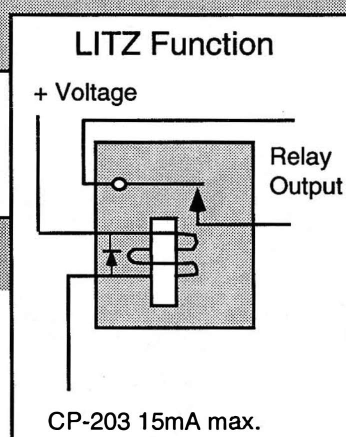
Expansion Range

138 MHz - 165 MHz
430 MHz - 512 MHz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



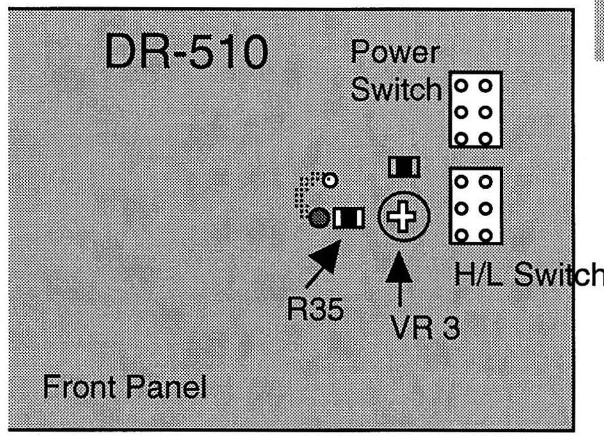


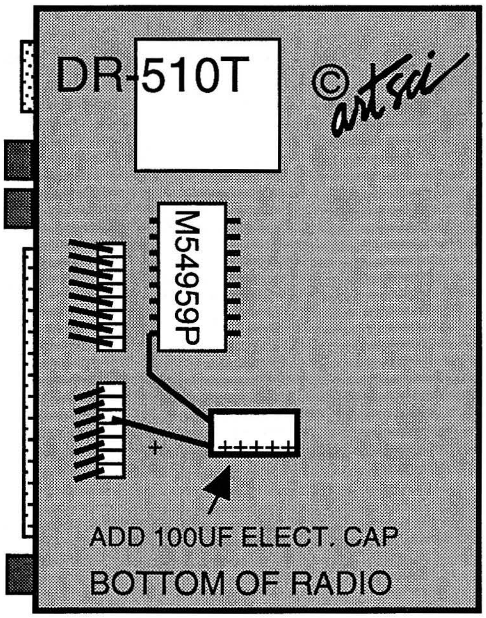


Expanded RF Modification

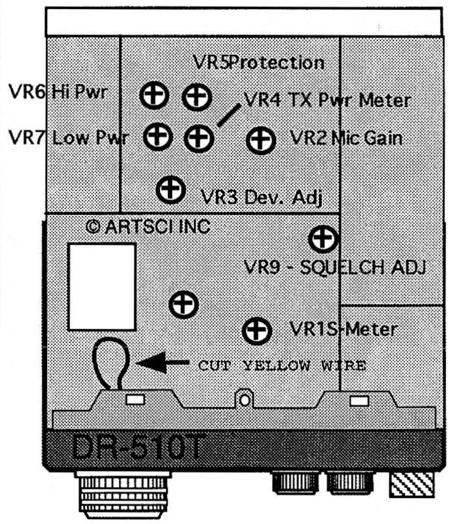
1. Remove power and Antenna.
2. Remove the top cover.
3. Locate and **cut the BLUE jumper wire.**(2 meter Mod)
4. Locate and **cut the RED jumper wire.** (440 Mod)
5. Reassemble the radio
6. **Reset the microprocessor.**
   (Press and hold the [FUNCTION] button and tum the radio on)

Receive and Transmit Expansion



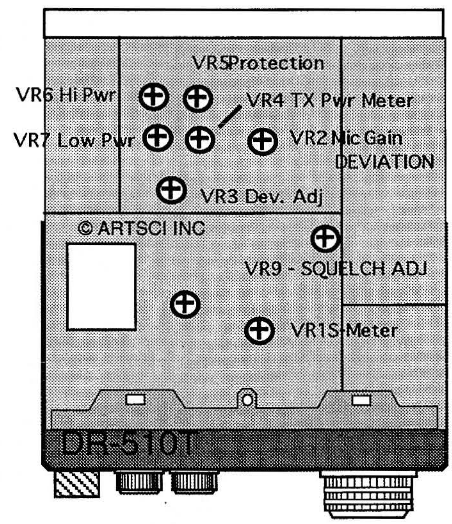


UPPER SIDE (VHF)



VR1 on
Tone squelch
board the
PL Level

BOTTOM SIDE (UHF)



Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove screws from case and open radio.
3. **Cut the yellow wire** looped around the blue condenser
4. Remove 2 screws from corners of tone board, to expose motherboard.
5. **Solder a 16 volt 100uf electrolytic** as shown. (note 10-100uf)
   - lead to pin 8 of M54959P + lead to third pin of socket (Orange wire)
6. Remove the front cover
7. **Short chip resistor R35** and solder bridge the pads to the left of the resistor.
8. Reassemble radio
9. **Reset microprocessor** (Push reset button)

CROSS BAND REPEATER PROCEDURES -

Select the VHF & UHF frequencies and press [SHIFT] until "DUAL" appears.

TURN ON : Press and hold [REV] and turn power on. The volume control controls the amount of repeater audio.

TURN OFF : Turn radio off.

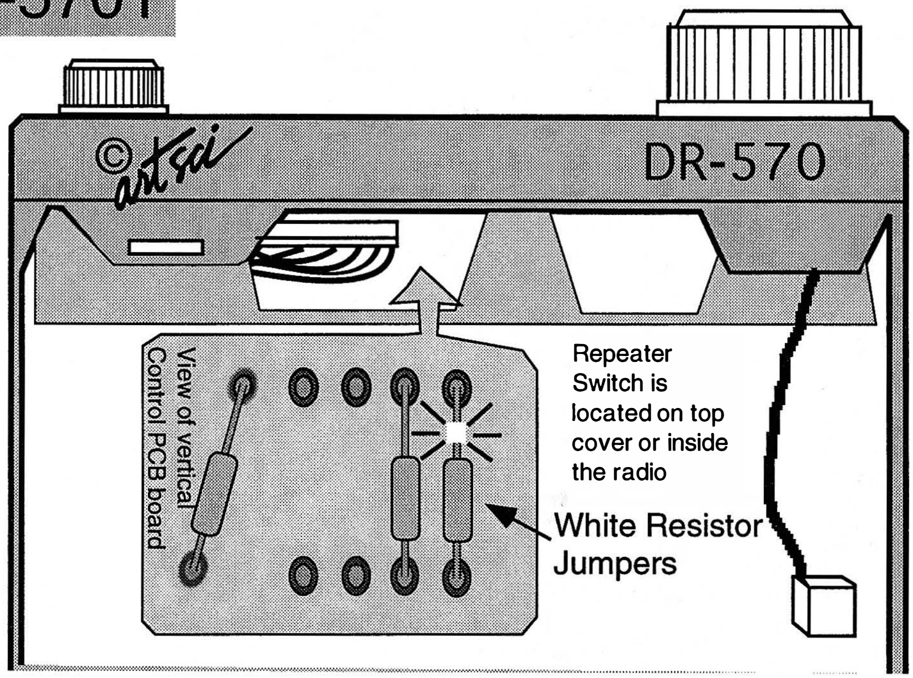
Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz. Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Transmit Expansion

DR-570T



Expansion Range

The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

ALIGNMENT	UHF	VHF
TX HIGH POWER	VR5	VR2
TX LOW POWER	VR7	VR4
RF METER	VR6	VR1
DEVIATION	VR3	VR3
SQUELCH ADJ	VR1	VR1
S-METER	VR2	

300 MHz & 800 MHz Receive

300 MHz
In 2 Meter sub band
Press [FUNC] [BAND] [BAND]

800 MHz
Press [FUNC] [BAND] [BAND] [BAND]

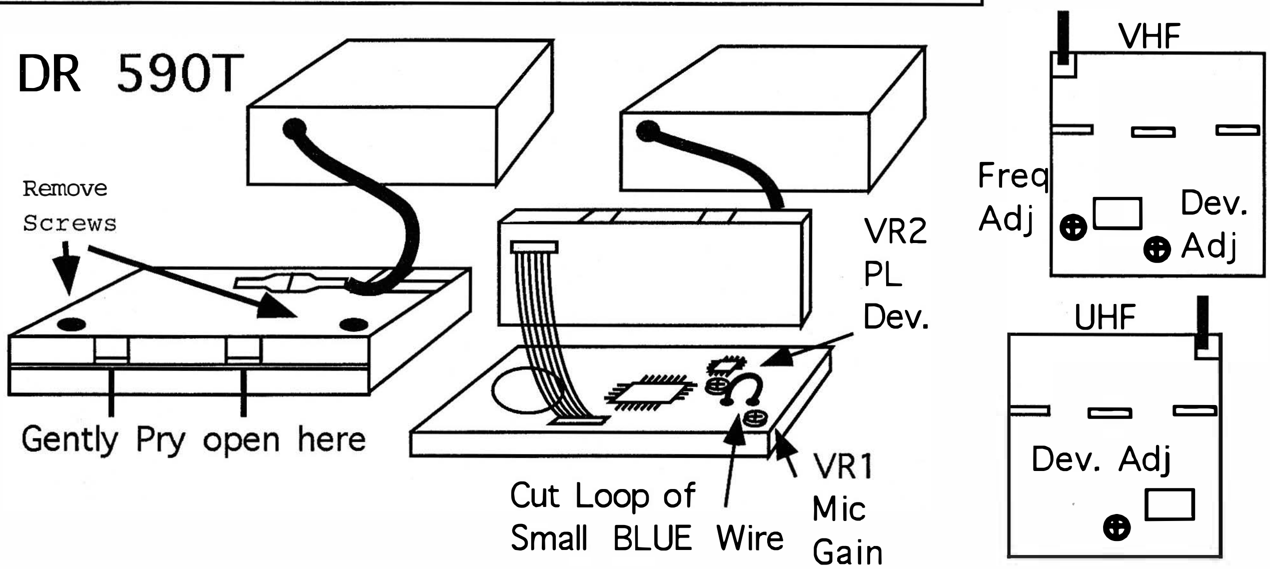
Expanded RF Modification

1. Remove Power and Antenna.
2. Remove screws from case and open radio (3 screws in the top and 2 on each side.)
3. Locate and **cut the indicated White resistor jumpers.** (They are located on the vertical control PCB board.)
4. **Turn repeater/normal switch to repeater mode.**
5. **Reset the microprocessor.** (Press and hold [FUNCTION] and tum power on)
6. Remove the two pin connector to disable audio bleed in repeater mode.
7. Reassemble radio.

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

1. Remove Power and Antenna.
2. Remove the four screws, (2 on each side) holding the LCD display to the main body of the radio.
3. DO NOT DISCONNECT THE BLACK CONNECTOR CABLE FROM THE LCD DISPLAY.
4. Locate and unscrew the 2 screws holding the LCD display together.
5. Carefully separate the back cover of the display from the front cover. Use a flat blade screwdriver to apply slight pressure to the locking tabs in the top of the display.
6. Locate and **cut the loop of BLUE wire.**
7. Reassemble the radio.
8. **Reset the microprocessor.** (Press and hold the [FUNCTION] key and tum power on.)

Cross Band Repeater Instructions

ENABLE REPEATER MODE: Simultaneously press the [FUNCTION] key and the [VHF] Key. The display will alternate between VHF and UHF every 3 seconds.

DISABLE REPEATER MODE: Simultaneously press the [FUNCTION] key and the [UHF] Key.

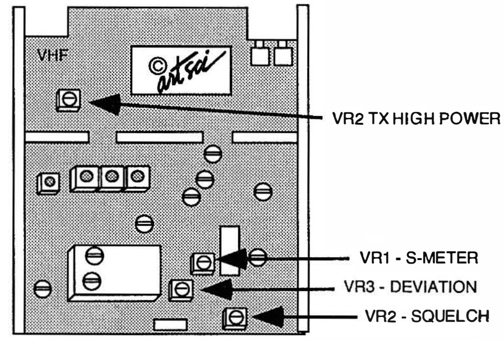
A audio frequency response kit is available from Alinco. Contact them for the parts and instruction sheet. (This is for improving the Cross-band repeater audio)

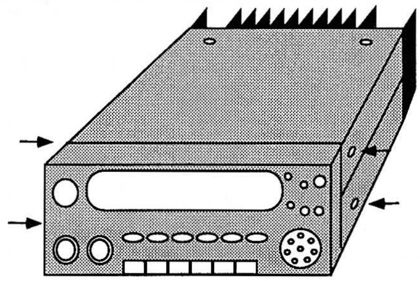
(818) 843-4080 12-4 PST, Fax:(818) 846-2298

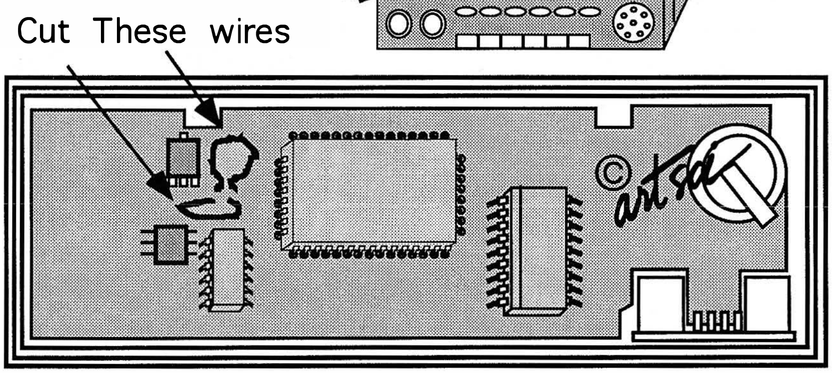
Receive and Transmit Expansion

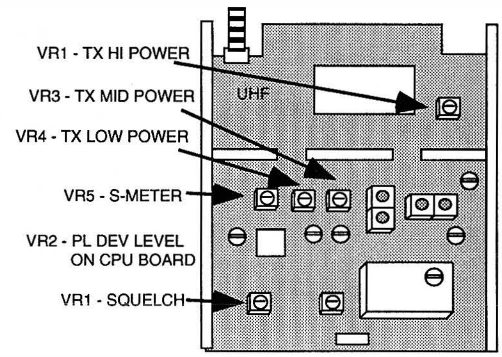
Expansion Range

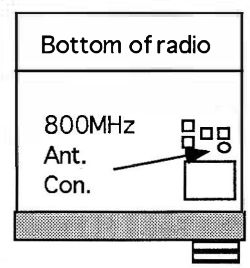
The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.





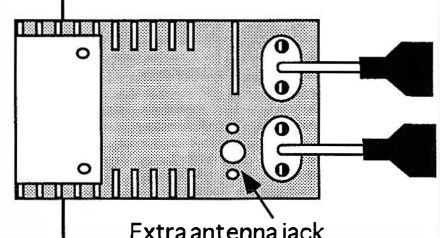






Expanded RF Modification

1. Remove the Power cable and Antenna.
2. Remove the 4 screws, (two on each side).
   HOLD THE CONTROL HEAD against the main unit.
3. Remove the 2 screws holding the control head together.
4. Carefully separate the back and front cover of the control unit.
5. **Cut the RED wire** to allow reception in the Aircraft and the 800 MHz band.
6. **Cut the BLUE wire** to expand the TX & RX frequencies.
7. Reassemble the control head.
8. Remove the bottom cover. (two additional screws on the bottom cover)
9. For 800 MHz RX, feed a new antenna cable through the optional antenna jack on the back of the main body of the radio. (Order Optional Ant. Kit EAK-599 from Alinco)
10. Locate antenna connector CN59 and attach the antenna cable.
11. Reassemble the radio .
12. **Reset the Microprocessor**. (Push and hold the [FUNC] key and turn the power on)



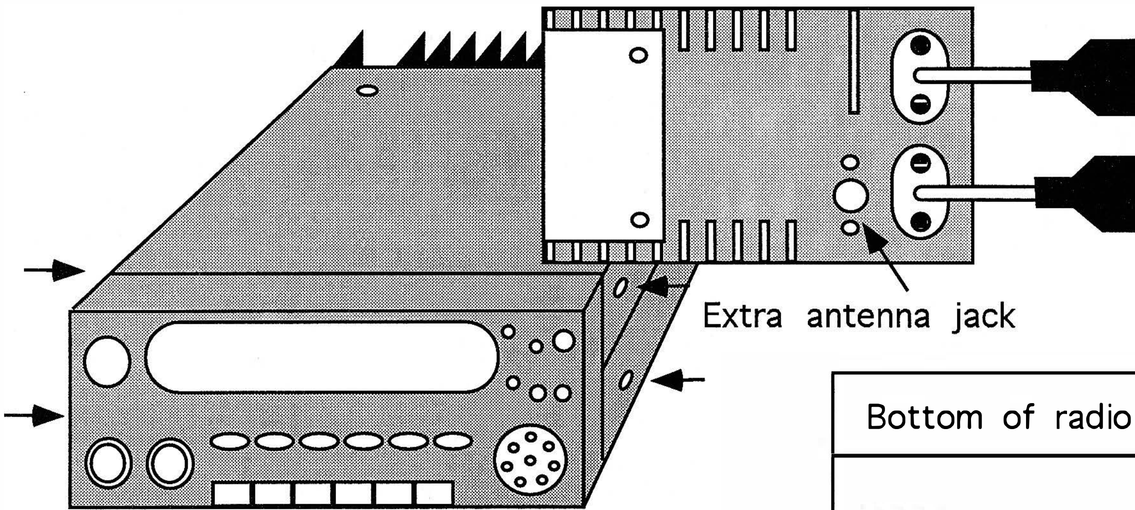
(818) 843-4080 12-4 PST, Fax:(818) 846-2298

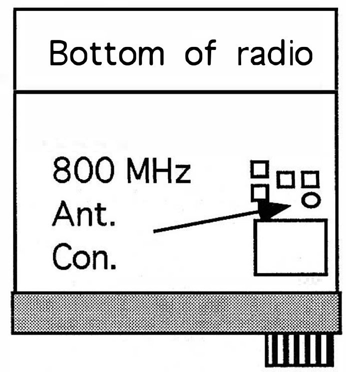
Receive and Transmit Expansion

ALINCO DR-600T DR-600TB

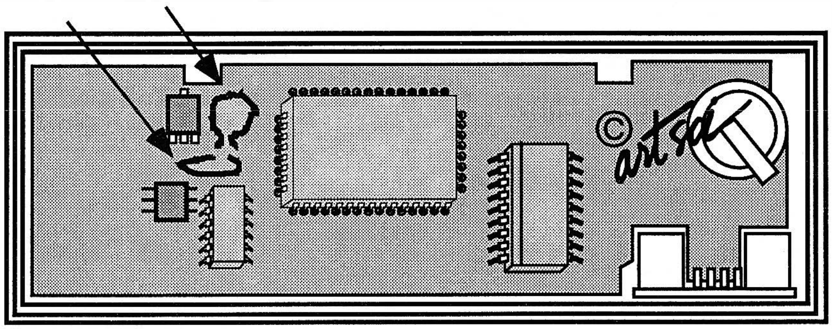
Expansion Range

130-173.999 MHZ & 440-519 MHZ





Cut These wires



Expanded RF Modification

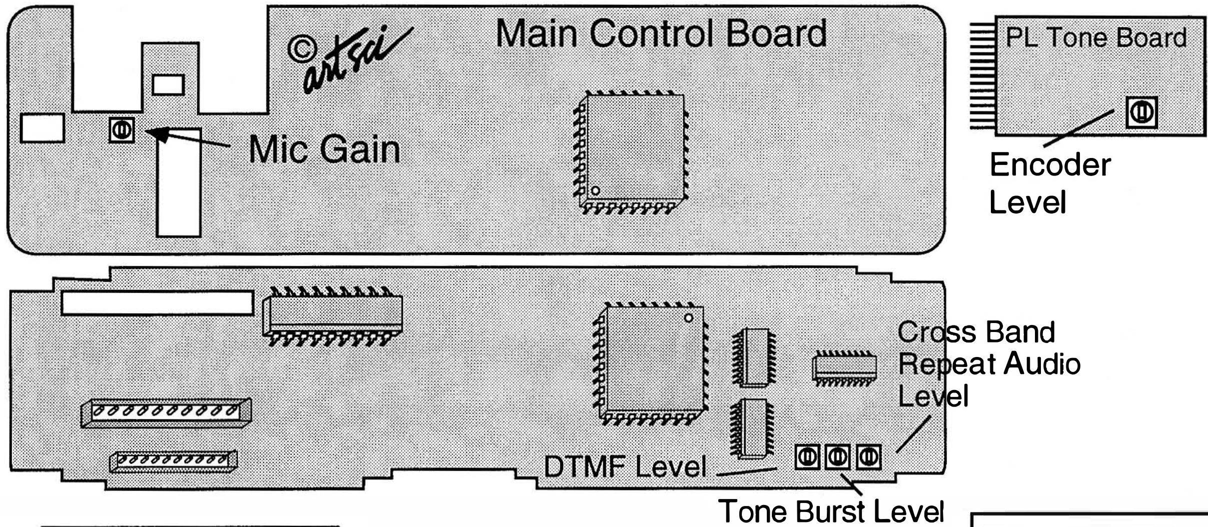
1. Remove the Power cable and Antenna.
2. Remove the 4 screws, (two on each side).
   HOLD THE CONTROL HEAD against the main unit.
3. Remove the 2 screws holding the control head together.
4. Carefully separate the back and front cover of the control unit.
5. **Cut the RED wire** to allow reception in the Aircraft and the 800 MHz band.
6. **Cut the BLUE wire** to expand the TX & RX frequencies.
7. Reassemble the control head.
8. Remove the bottom cover. (two additional screws on the bottom cover)
9. For 800 MHz RX, feed a new antenna cable through the optional antenna jack on the back of the main body of the radio. (Order optional Ant. kit EAK-599 from Alinco)
   (**DR-600TB** HAVE THE 800 RX REMOVED!! Ser # starts with "TB")
10. Locate antenna connector CN59 and attach the antenna cable.
11. Reassemble the radio .
12. Reset the Microprocessor. (Push and hold the [FUNC] key and turn the power on)

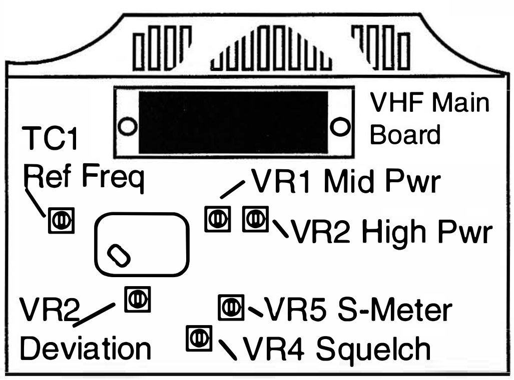
(818) 843-4080 12-4 PST, Fax:(818) 846-2298

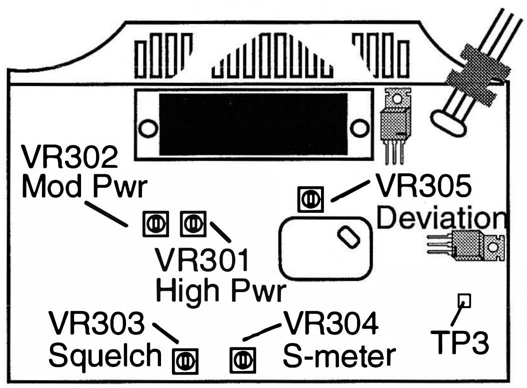
Receive and Transmit Expansion

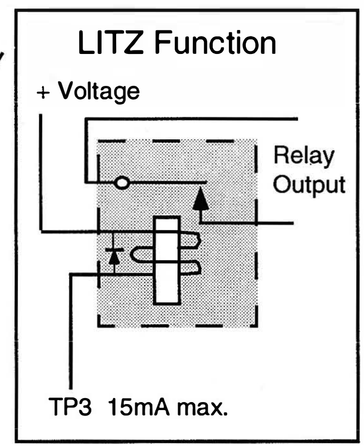
Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



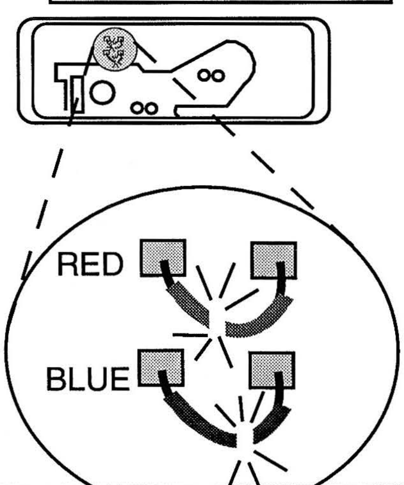




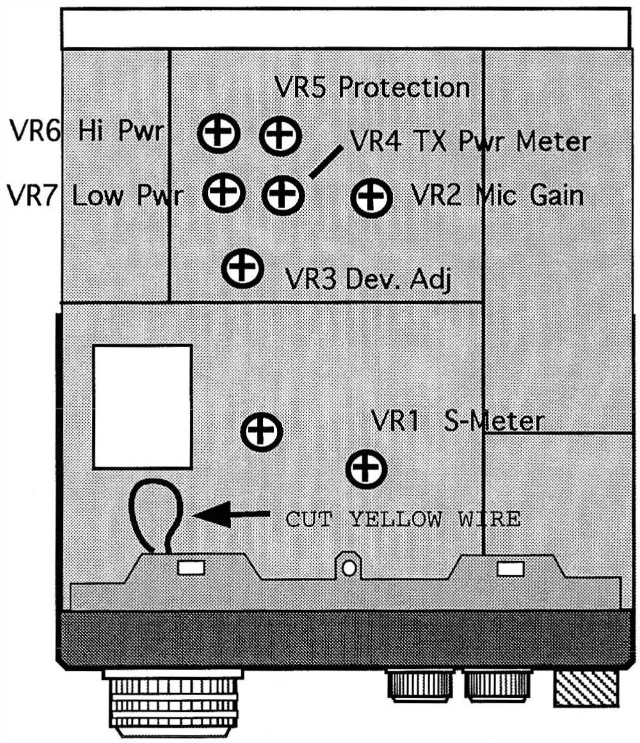


Expanded RF Modification

1. Remove the Power cable and Antenna.
2. Remove the 4 screws, (two on each side).
   HOLD THE CONTROL HEAD against the main unit.
3. Remove the 2 screws holding the control head together.
4. Carefully separate the back and front cover of the control unit.
5. **Cut the RED wire** to allow reception in the Aircraft and the 800 MHz band.
6. **Cut the BLUE wire** to expand the TX & RX frequencies.
7. Reassemble the control head.
8. Reset the Microprocessor.
   (Push and hold the [FUNC] key and turn the power on)



(818) 843-4080 12-4 PST, Fax:(818) 846-2298



VR1 on
Tone squelch
board the
PL Level

Expansion Range

RX - 32 MHz - 87 MHz
TX - 42 Mhz - 70 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Expanded RF Modification

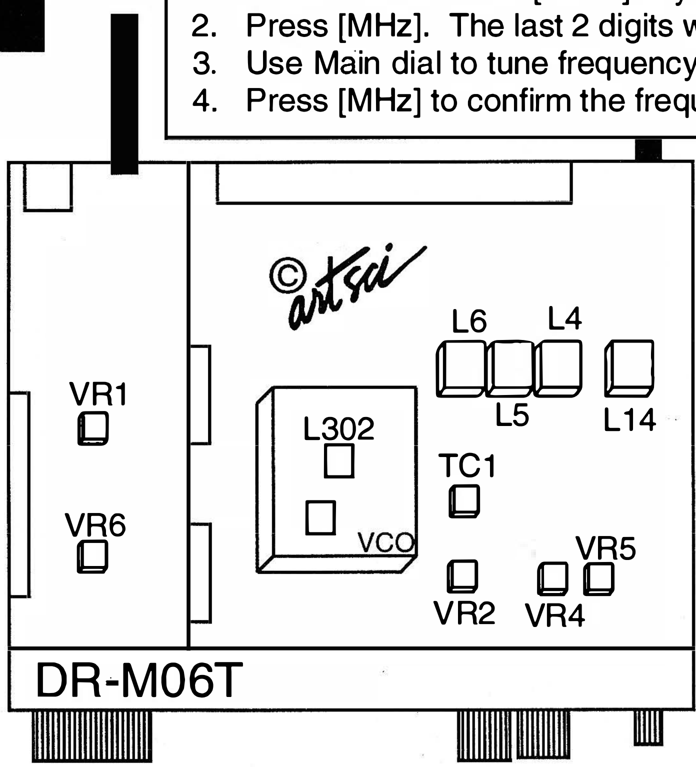
1. Remove top and bottom covers.
2. Remove the main dial from the case.
3. Remove the front plastic case.
4. Unscrew the 3 screws on the control unit and remove.
5. Locate jumper locations (see diagram)
6. **Place solder bridges on the left 2 locations.**
7. Reassemble the radio.
8. Reset the microprocessor
   (Press and hold [FUNC] and tum power on)

Adjustments

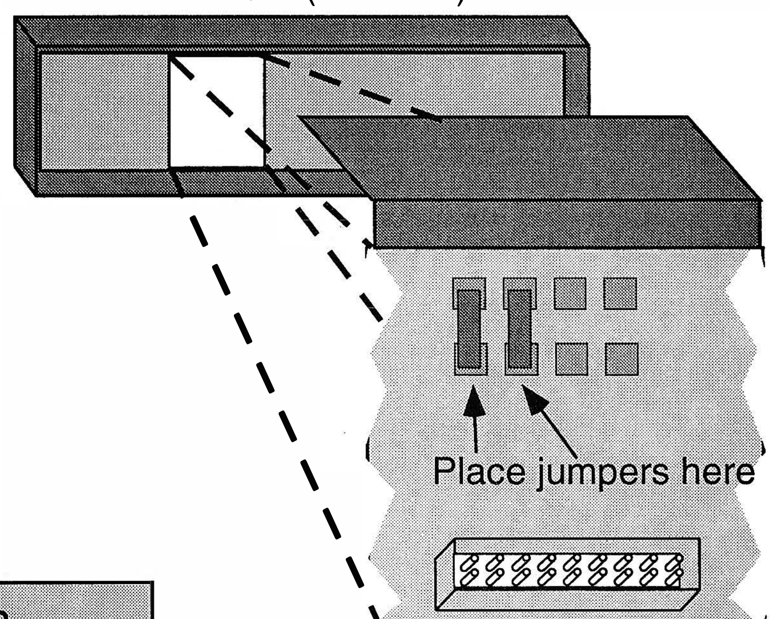
TC1 -- Reference Freq.
VR1 -- High TX Pwr
VR2 -- Deviation
VR4 -- Mic Gain
VR5 -- S-meter Adj.
VR6 -- Low TX Pwr

Expanded Rx only Modification

1. Press and hold the [CALL] key and tum radio on.
2. Press [MHz]. The last 2 digits will disappear.
3. Use Main dial to tune frequency. (40 - 60 MHz)
4. Press [MHz] to confirm the frequency.



Control Unit (Back side)

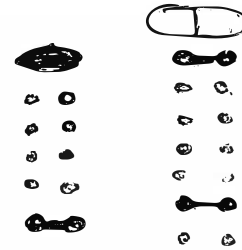


Channel display Modification

1. Press and hold the [TOT] key and tum radio on.
The radio will now display channel numbers.

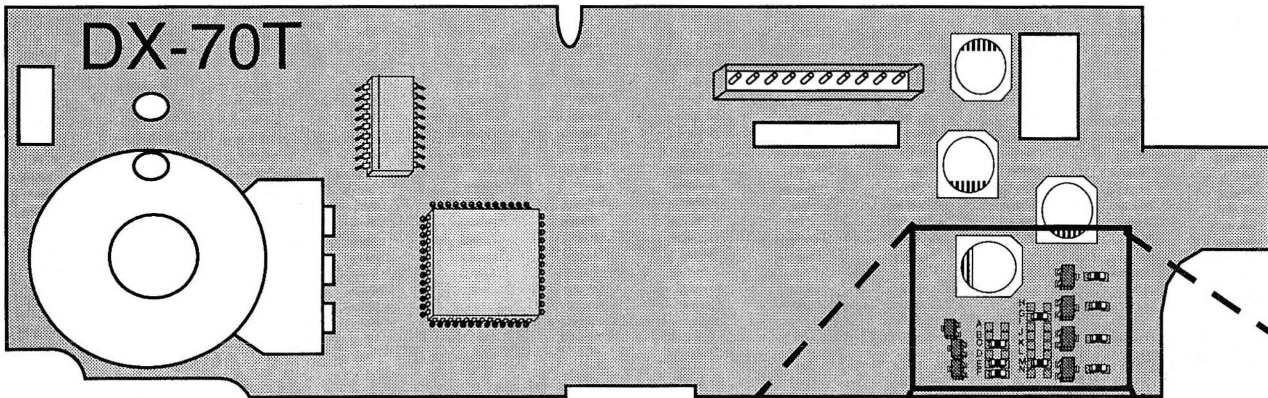
(818) 843-4080 12-4 PST, Fax:(818) 846-2298

©artsci



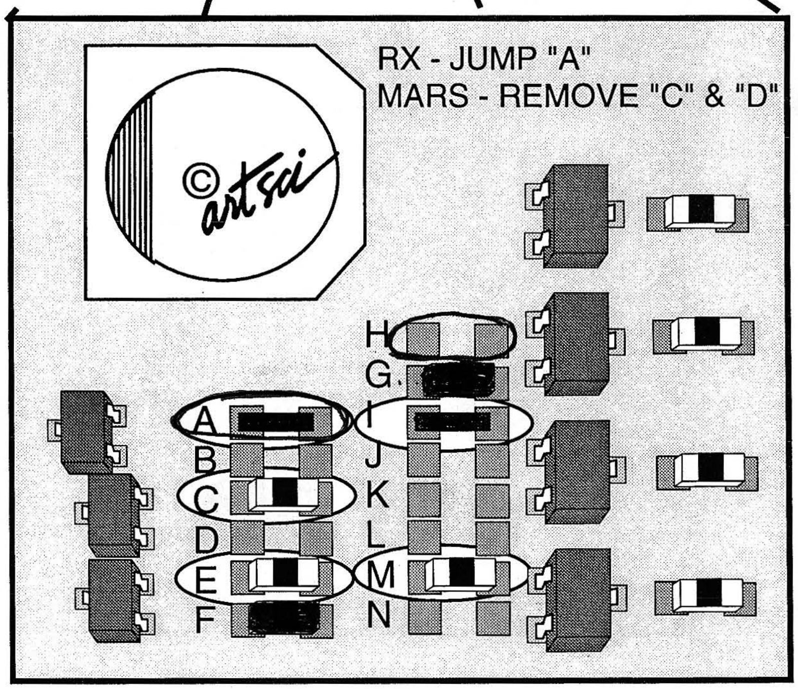
Expanded RF Modification

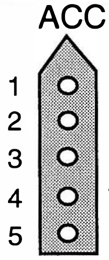
1. Remove power and antenna.
2. Remove control head and disconnect the control cable.
3. Remove 2 screws from the back of the control head.
4. Remove the back cover from the control head.
5. Locate and **solder jump location "A".** (RX up to 35 MHz)
6. Locate and **solder jump location "I".** (RX from 45 MHz - 60 MHz)
6. Locate and **remove jump location "M"**. (down to 30 KHz)
7. Locate and **remove jumpers from locations "C" & "E".** (Mars Mod)
8. Reassemble the radio.
9. Reset the microprocessor. (Press and hold [F] and tum the radio on.)



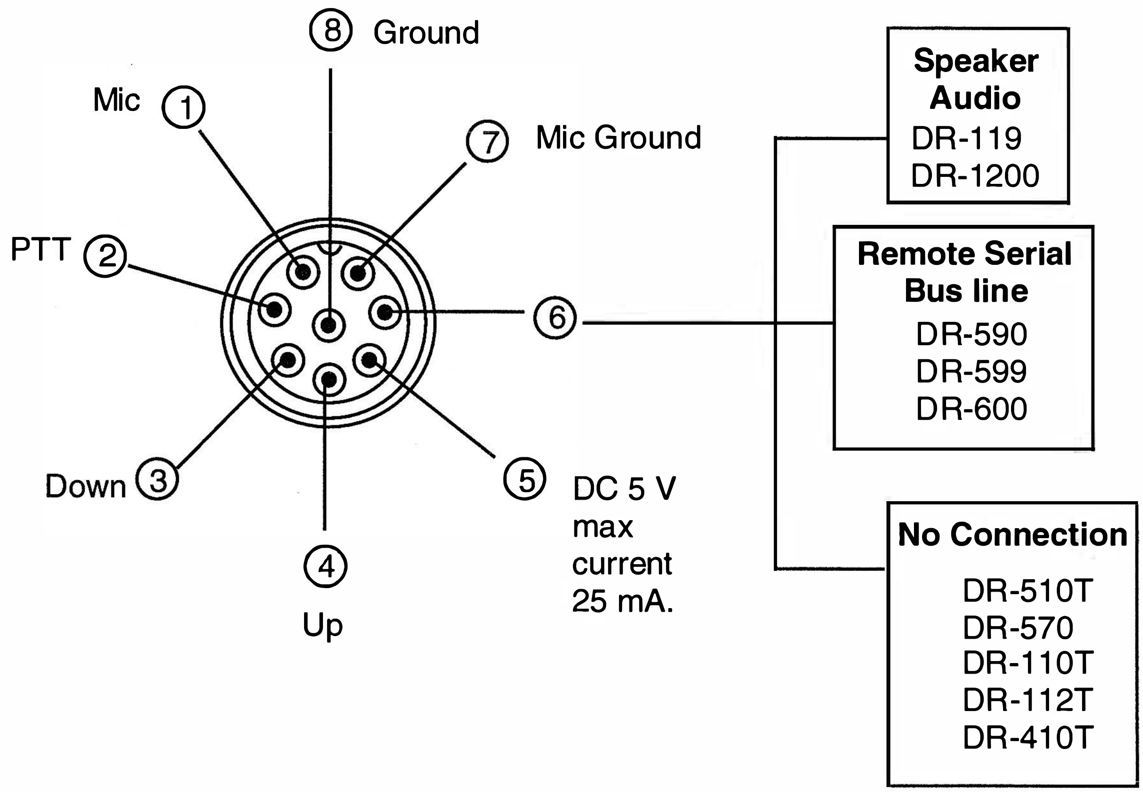
Expansion Range

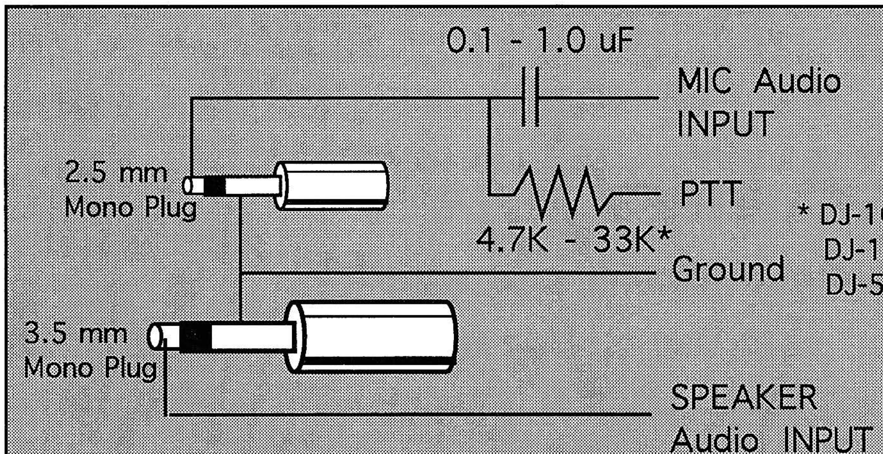
RX: HF down to 30 kHz and up to 35 Mhz.
TX: 6 meters 45 MHz - 60 MHz
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.





(818) 843-4080 12-4 PST, Fax:(818) 846-2298

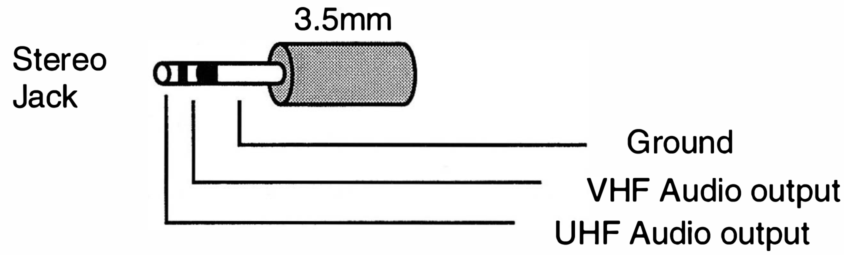


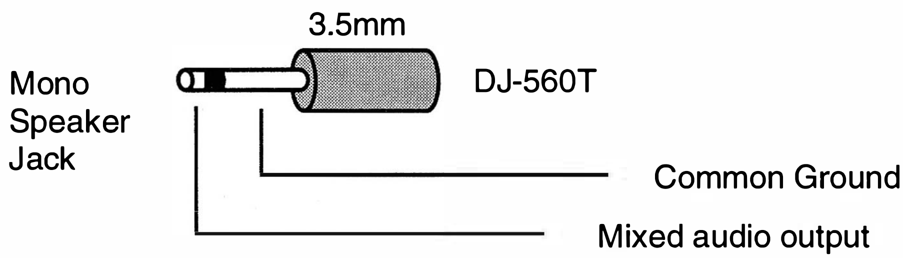


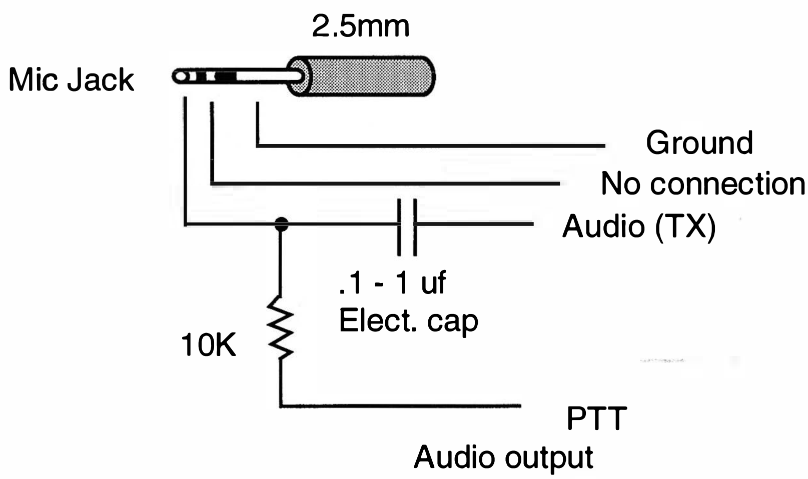
* DJ-1GT use 470 ohm to 4.7 K
DJ-180 use 4.7 ohm to 33 k
DJ-580 uses 1K to 10K

DJ-160, DJ-162, DJ-460, DJ-560 use mono plugs
DJ-580 uses Stereo Plugs with the RING (Center section) not used)
DJ-180 uses a Mic Stereo Plug with the RING (Center section) not used)
DJ-G1T uses a Mic Stereo Plug with the RING (Center section) not used)

(818) 843-4080 12-4 PST, Fax:(818) 846-2298


3.5mm
Stereo Jack
Ground
VHF Audio output
UHF Audio output


3.5mm
Mono Speaker Jack
DJ-560T
Common Ground
Mixed audio output


2.5mm
Mic Jack
Ground
No connection
Audio (TX)
.1 - 1 uf
Elect. cap
10K
PTT
Audio output

Performance Report

Radio ______________________________ Date______________

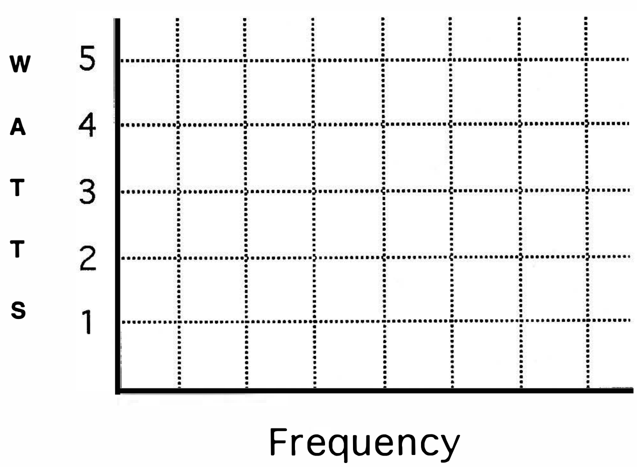
Owner : Name ____

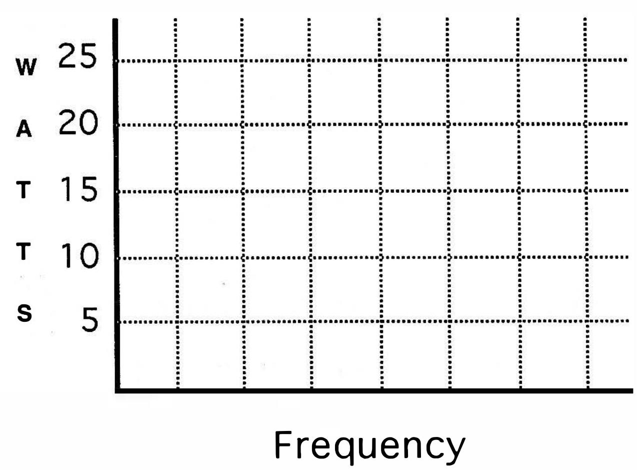
Address ______________________________________

City ____________________ St. ______ Zip ______________

Phone (   )   - ____________________

Description	Before	After
Power out (Low)	________ Watts	________ Watts
Power out (High)	________ Watts	________ Watts
Frequency Error (Simplex)	________ Hz	________ Hz
Frequency Error (Offset)	________ Hz	________ Hz
Receive Sensitivity (Mid-band)	________ uv	________ uv
Receive Sensitivity (_____MHz)	________ uv	________ uv
Receive Sensitivity (_____MHz)	________ uv	________ uv
PL Deviation	________ Hz	________ Hz
DTMF Deviation	________ KHz	________ KHz
Audio Deviation	________ KHz	________ KHz
Lowest usable Freq @ .5 Pwr	________ MHz	________ MHz
Highest usable Freq @ .5 Pwr	________ MHz	________ MHz





Standard/Heath Modifications

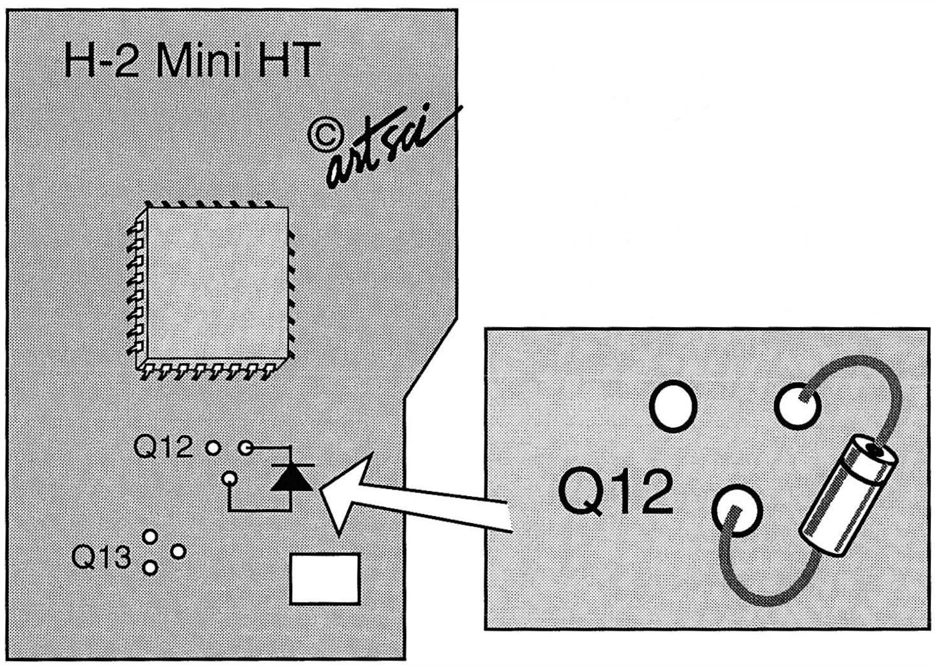
HEATH

STANDARD

Expansion Range

130 MHz - 169.995 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

1. Remove battery and Antenna.
2. Remove 2 lower screws from the battery plate.
3. Remove 2 screws securing thr front & back cases.
4. Locate Q12 Position. (find point A and B)
5. **Solder a diode** (1N914 or eq.) from point A to point B
   Cathode to point A, Anode to Point B.
6. Reassemble the radio.
7. Reset the microprocessor.

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Expanded RF Modification

1. Remove battery and Antenna.
2. Remove 2 lower screws from the battery plate.
3. Remove 2 screws securing thr front & back cases.
4. Locate Q106 Position. (find point A and B)
5. **Solder a diode** (1N914 or eq.) from point A to point B
   Cathode to point A, Anode to Point B.
6. Reassemble the radio.

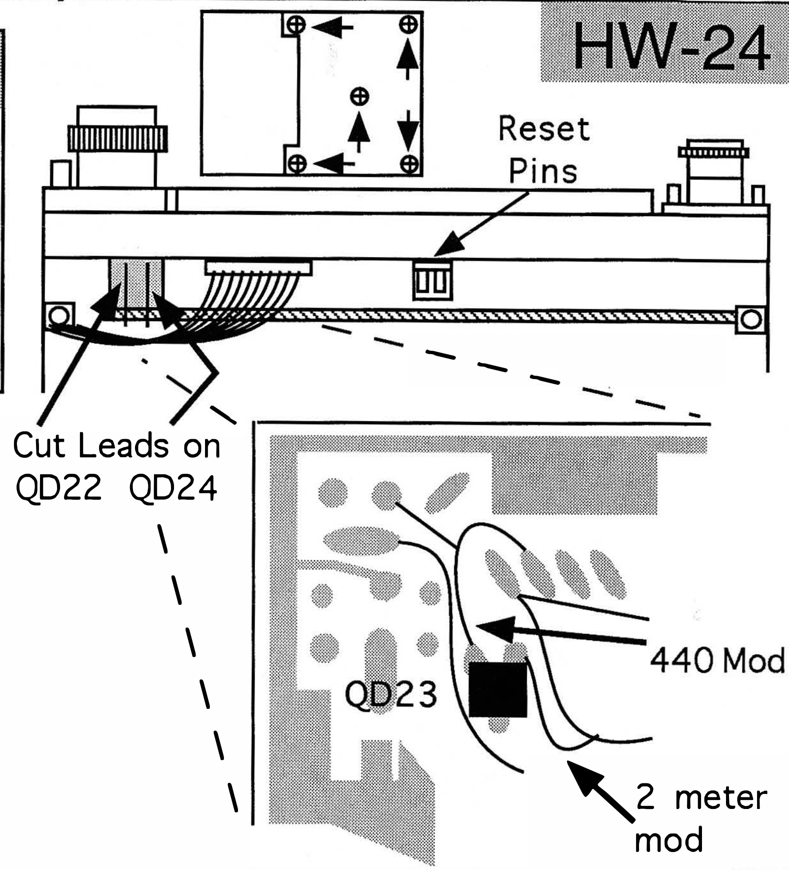
(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Transmit Expansion

HEATH
HW-24

Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



1. Turn Power on.
2. Push RESET.
3. Press and hold [FUNCTION] then [0]
4. Press and hold [FUNCTION] then [ENT]
5. Press PTT Briefly.
6. Press [UHF]
7. Press and hold [FUNCTION] then [LAMP]
8. Press and hold [FUNCTION] then [0]
9. Press and hold [FUNCTION] then [CODE]
10. Press and hold [FUNCTION] then [LAMP]
11. Press and hold [FUNCTION] then [3]
12. Press PTT Briefly.
13. Press [VHF]
14. Press and hold [FUNCTION] then [STEP]
15. Select 12.5 KHz. (Use Selectror Knob)
16. Press PTT Briefly.
17. Press and hold [FUNCTION] then [8]
18. Press and hold [FUNCTION] then [8]
19. Press and hold [FUNCTION] then [7]
20. Press and hold [FUNCTION] then [7]
21. Press and hold [FUNCTION] then [MS.M]
22. Select 144.9875 MHz (Use Selector Knob)
23. Press and hold [FUNCTION] then [0]
24. Press and hold [FUNCTION] then [ENT]
25. Press PTT Briefly.
26. Press and hold [FUNCTION] then [0]
27. Press and hold [FUNCTION] then [MS.M]

To Receive 300 - 400 Mhz or 800 - 900 MHz

Press [UHF]
Press and hold [FUNCTION] then [SET]
Press and hold [FUNCTION] then [3] to Select Bands

HEATH

Expanded RF Modification

1. Remove power and Antenna.
2. Remove the wire mounting stand.
3. Remove the five screws that hold the bottom cover.
4. Remove the bottom plate being careful to unplug the speaker as you remove it.
5. Locate and cut the lead of QD22 (2 meter RX Mod)
6. Locate and cut the lead of QD24 (440 RX Mod)
7. Locate Chip Diode QD23 on front panel board.
8. **Cut leads to both bottom leads of QD23.**
   (note it may be required to remove the front panel from the body of the radio.)
9. Reassemble the radio (see next step)
10. Reset the Radio. (short the Reset pins with a wire or screw driver.)

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Transmit Expansion

HW-24HT

Expansion Range

130 MHz - 169.995 MHz
340 Mhz - 379.995 MHz
400 MHz - 469.995 MHz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Keyboard RF Modification

Open Receiver

1. Set channel step to 12.5 kHz.
2. Select VFO A
3. Set Frequency to 147.7575 MHz.
4. Press [FUNC] then [7/RPT]
5. Press [FUNC] then [8+/-]
6. Press [FUNC] then [*ENT]
7. Press [FUNC] then [*ENT]

Open Transmitter

1. Set Frequency to 147.7575 MHz.
2. While in RPT mode, hold [VCS] and push [PTT].
3. Hold [FUNC] and press [REV].

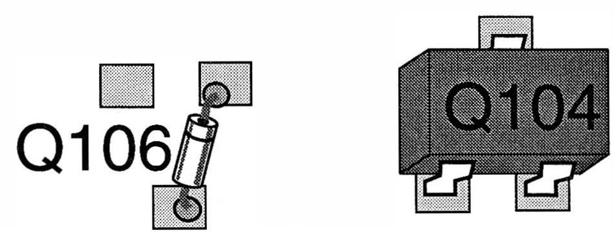
R240 - Deviation
R501 - CTCSS tone Deviation
R601 - DTMF tone deviation

Band Selection

Press [RCL]
Press [FUNC] then [C/BAND]

Hardware RF Modification

1. Remove Q104 from logic board.
   (Located to the left of the microprocesor.
2. Install a 1N4148 across Q106
   (below Q104 above)



Expansion Range

The Exact range of this radio is not know as of press time.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Expanded RF Modification

1. Turn the radio on.
2. Set display to 12.3456
3. Press [BAND] button.
4. Turn radio off.
5. Turn radio on.

Note: You must perform these steps within 3 seconds to properly reset the radio.

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Performance Report

Radio ______________________________ Date ______________

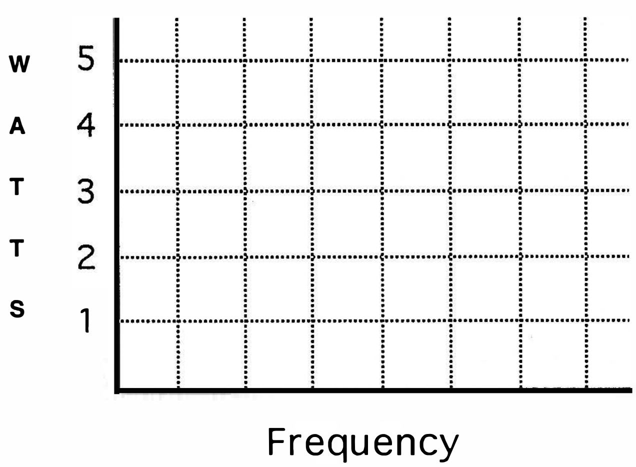
Owner : Name ______________________________________

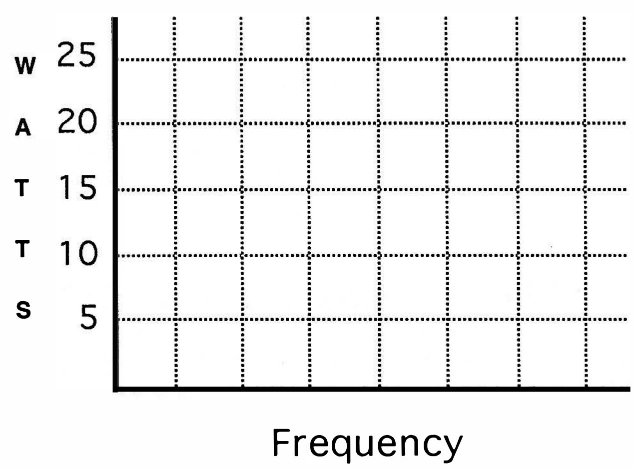
Address ______________________________________

City ________________ St. ______ Zip ____________

Phone (   )   -

Description	Before	After
Power out (Low)	________ Watts	________ Watts
Power out (High)	________ Watts	________ Watts
Frequency Error (Simplex)	________ Hz	________ Hz
Frequency Error (Offset)	________ Hz	________ Hz
Receive Sensitivity (Mid-band)	________ uv	________ uv
Receive Sensitivity (_____MHz)	________ uv	________ uv
Receive Sensitivity (_____MHz)	________ uv	________ uv
PL Deviation	________ Hz	________ Hz
DTMF Deviation	________ KHz	________ KHz
Audio Deviation	________ KHz	________ KHz
Lowest usable Freq @ .5 Pwr	________ MHz	________ MHz
Highest usable Freq @ .5 Pwr	________ MHz	________ MHz



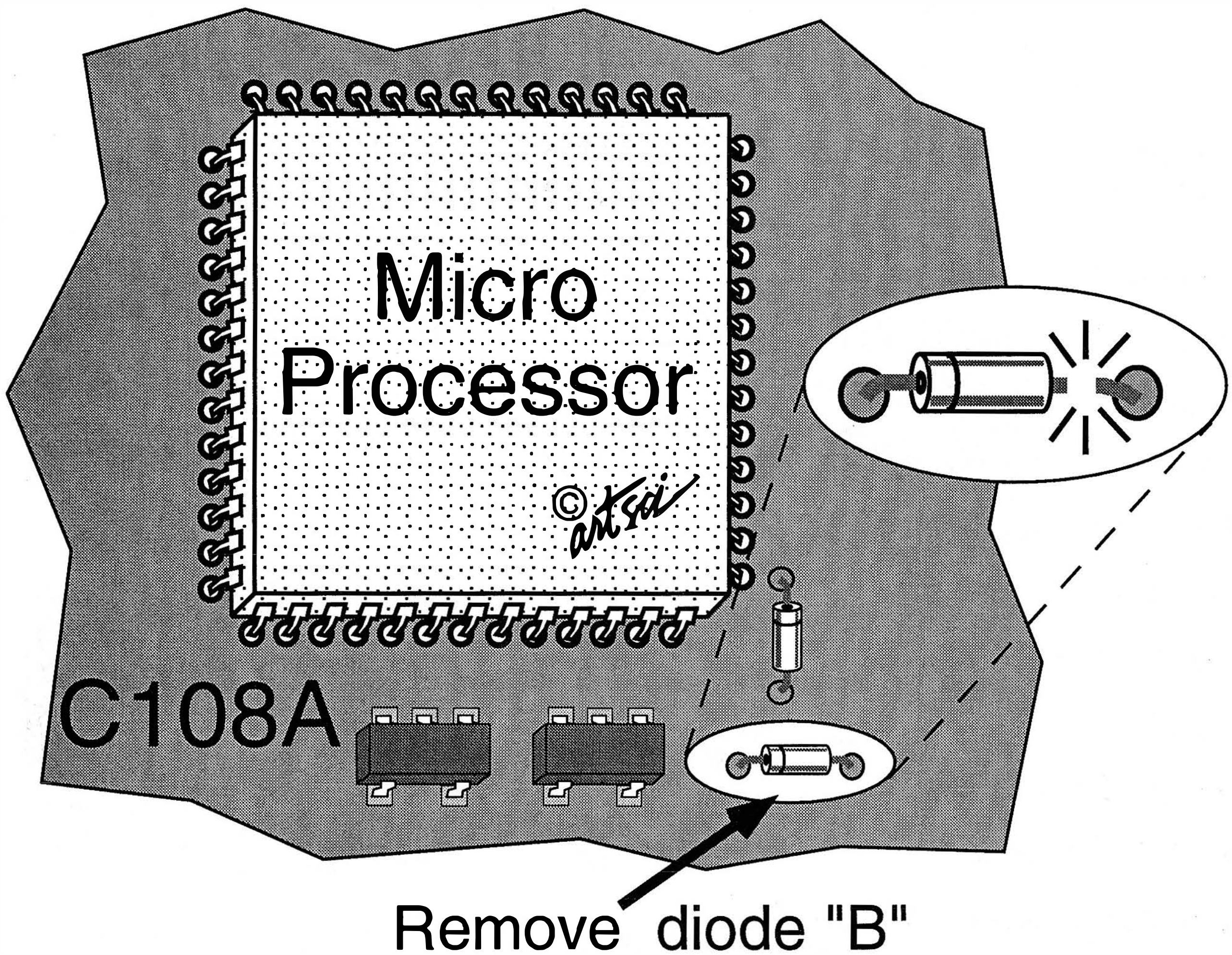


Receive and Transmit Expansion

STANDARD
C108A

Expansion Range

RX:	105 - 138 MHz AM
	140.000 - 174.995 MHz
TX:	120.000 - 160.000 MHz



STANDARD

Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove screws and open the case.
3. Locate Microprocessor.
4. Locateand cut Diode "B". (see drawing)
5. Reassemble the radio.
6. Reset the microprocesor. (see owners manual)

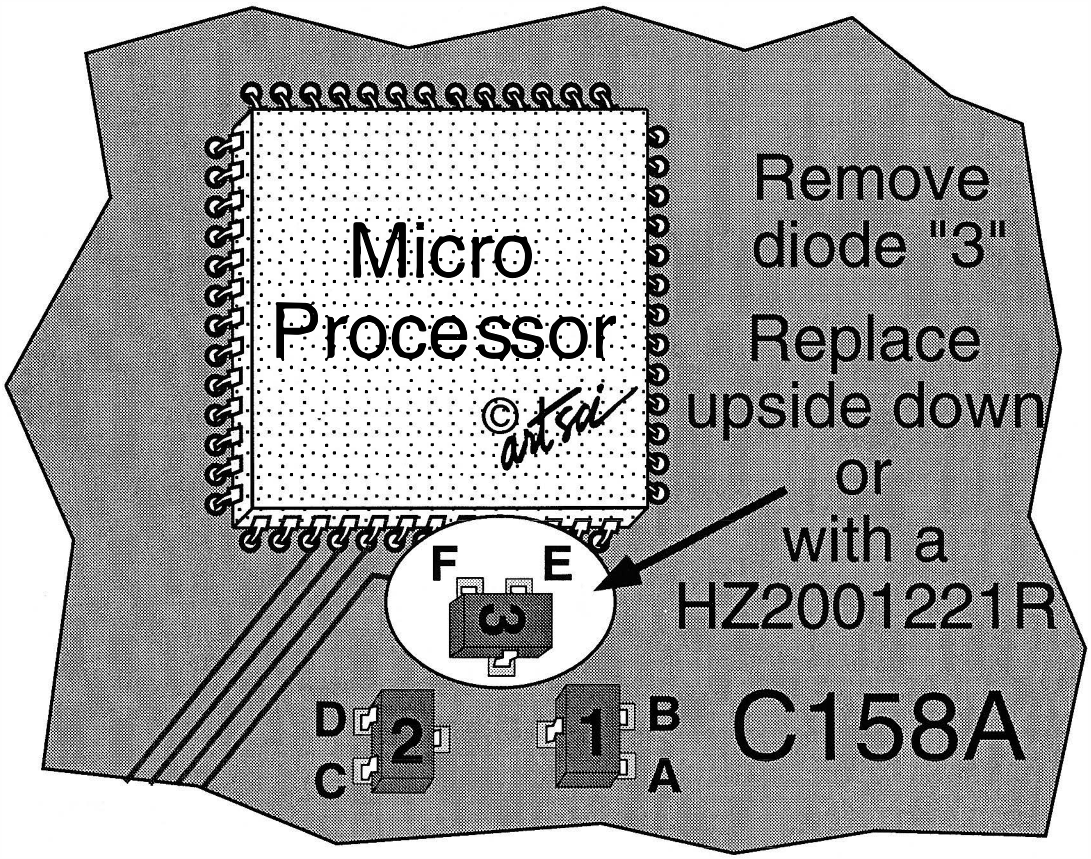
(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Transmit Expansion

C158A

Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

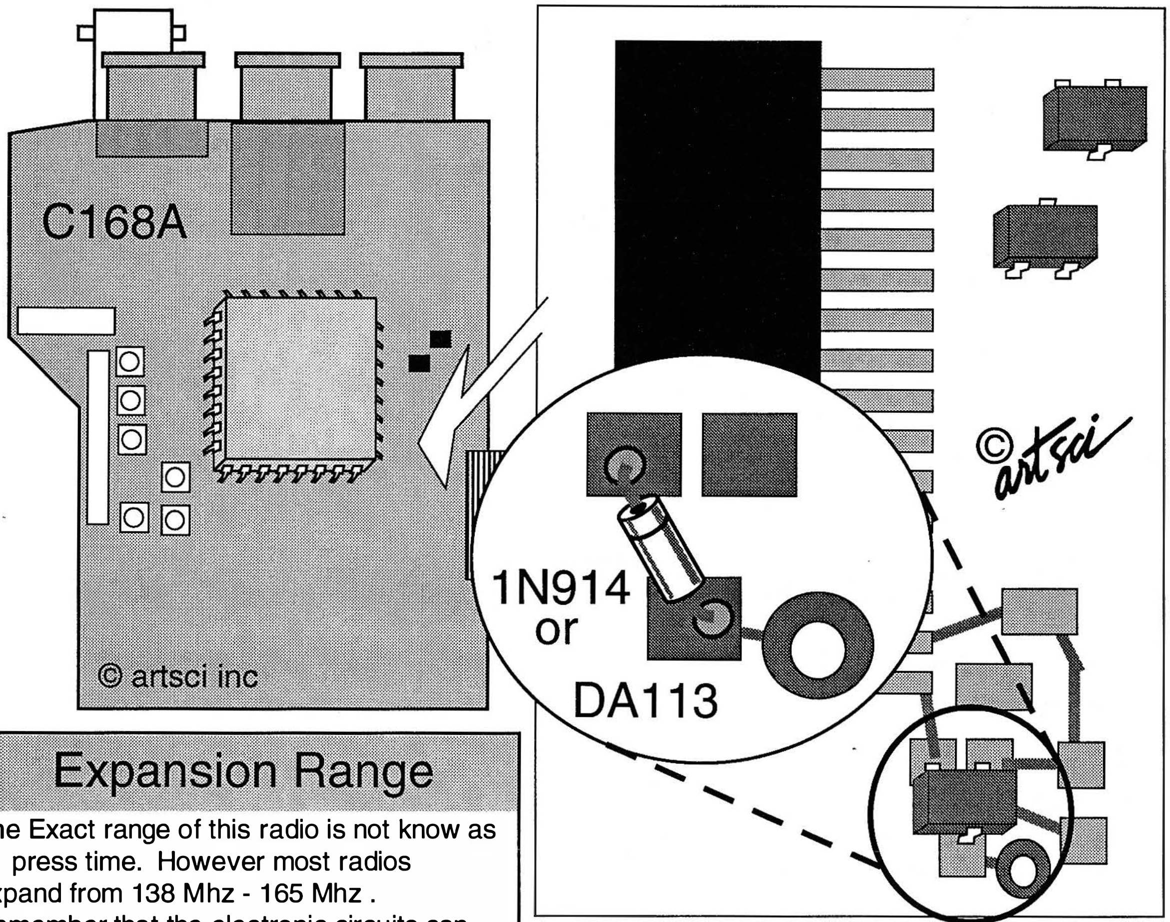
1. Remove Battery and Antenna.
2. Remove screws and open the case.
3. Locate Chip Diode "3" near microprocessor (see drawing)
4. **Remove Chip Diode "3". (may be already removed)**
5. **Reinstall the diode upside down** (reversing legs E & F) or
   Install a new Chip Diode DA112. (Standard part # HZ2001221R)
6. Reassemble the radio
7. Reset the microprocessor. (press and hold [FUNC] & turn power on)

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Transmit Expansion

STANDARD

C168A



Expansion Range

The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz . Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

DIRECT FREQENCY ENTRY

1. Press and hold [F] then [0].
2. Press and hold [F] then [0].
3. Press [8].

AM / FM mode switch

1. Press and hold [F] then [0].
2. Press and hold [F] then [2].

STANDARD

Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove screws and open the case. (Be careful. Do not break flat cables)
3. Locate microprocessor. (see Drawing)
4. Install a DA-113 chip diode in place. (A 1N914 may be used)
5. Reasseble the radio.
6. If required, RESET the microprocessor.

Reset Command

1. Switch to the Set Mode.
2. Press and hold [FUNC] & [3] (a Dot will appear left of the first digit)
3. Switch to the set mode.
4. Press and hold [FUNC] & [1] (the display will blank out and back on)

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Expansion Range

57 - 97 MHz RX AM/FM /
100 - 175 MHz RX AM/FM
213 - 391 MHz RX AM/FM
115 - 174 MHz TX/RX FM

Expanded Receive Modification

1. Tum Power on.
2. Press [ENT]
3. Press [0], [9].
4. Press [ENT]
5. Press and hold [F] then [0].
6. Press and hold [F] then [ENT].
7. Press and hold [F] then [0].
8. Press and hold [F] then [0].
9. Press and hold [F] then [8].
10. Press [CL]

DIRECT FREQENCY ENTRY

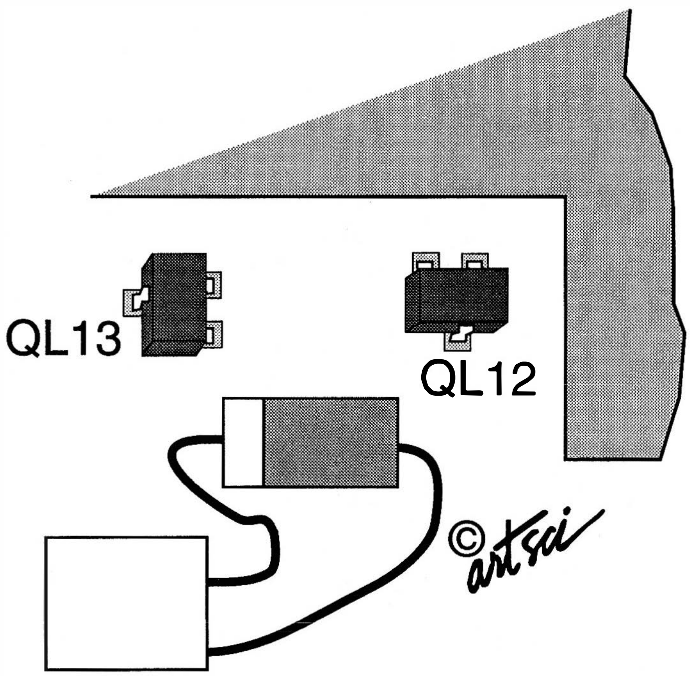
1. Press and hold [F] then [0].
2. Press and hold [F] then [0].
3. Press [8].

AM / FM mode switch

1. Press and hold [F] then [0].
2. Press and hold [F] then [2].

Expansion Range

The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

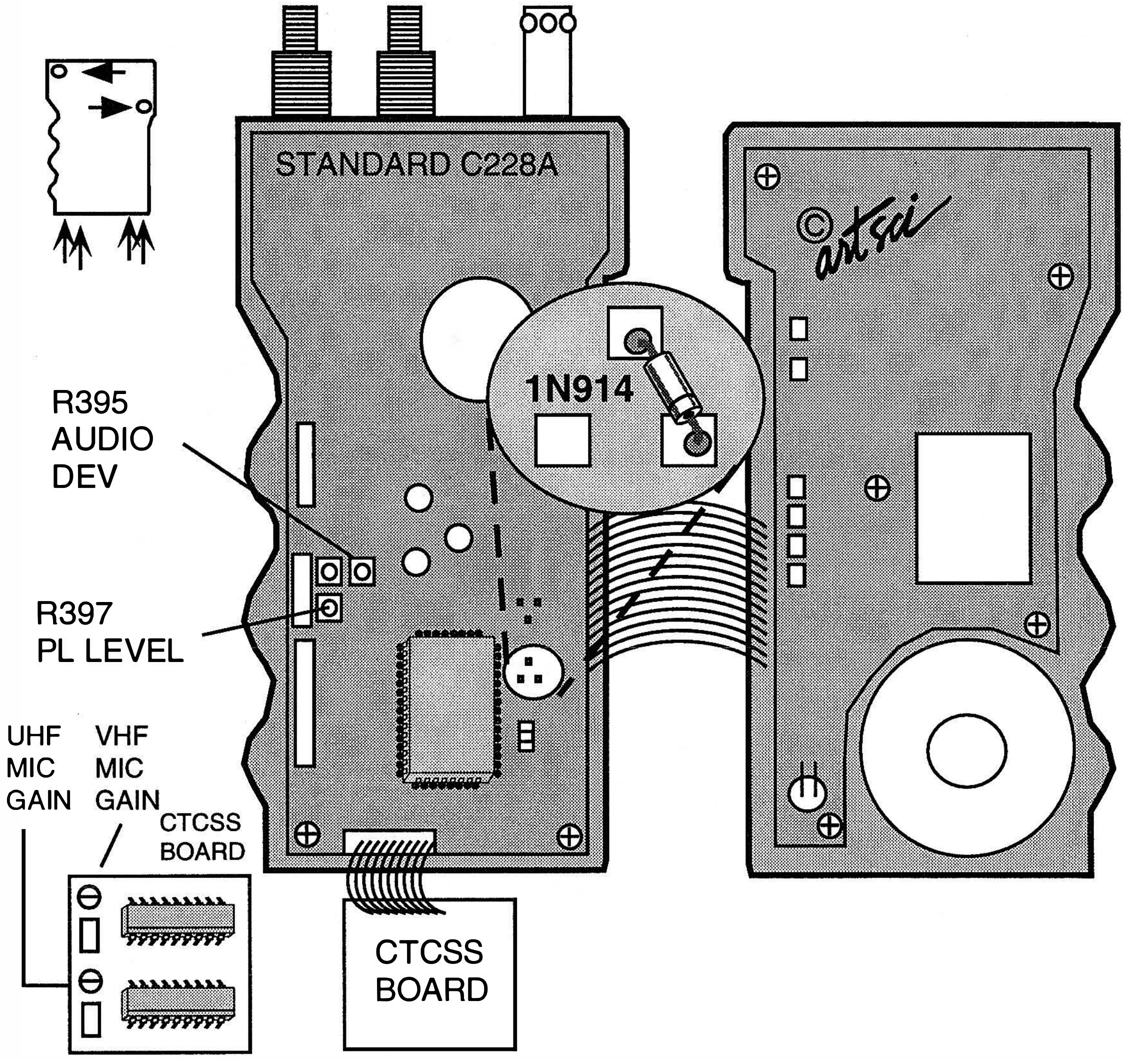
1. Remove Power and Antenna.
2. Remove screws and open case.
3. Locate the microprocessor board
4. Locate QL12 & QL13. (QL13 may already be missing)
5. **Remove QL12 & QL13**. (QL13 may already be missing)
6. Reassemble the radio
7. **Reset Microprocessor** (set mode 8).

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Transmit Expansion

Expansion Range

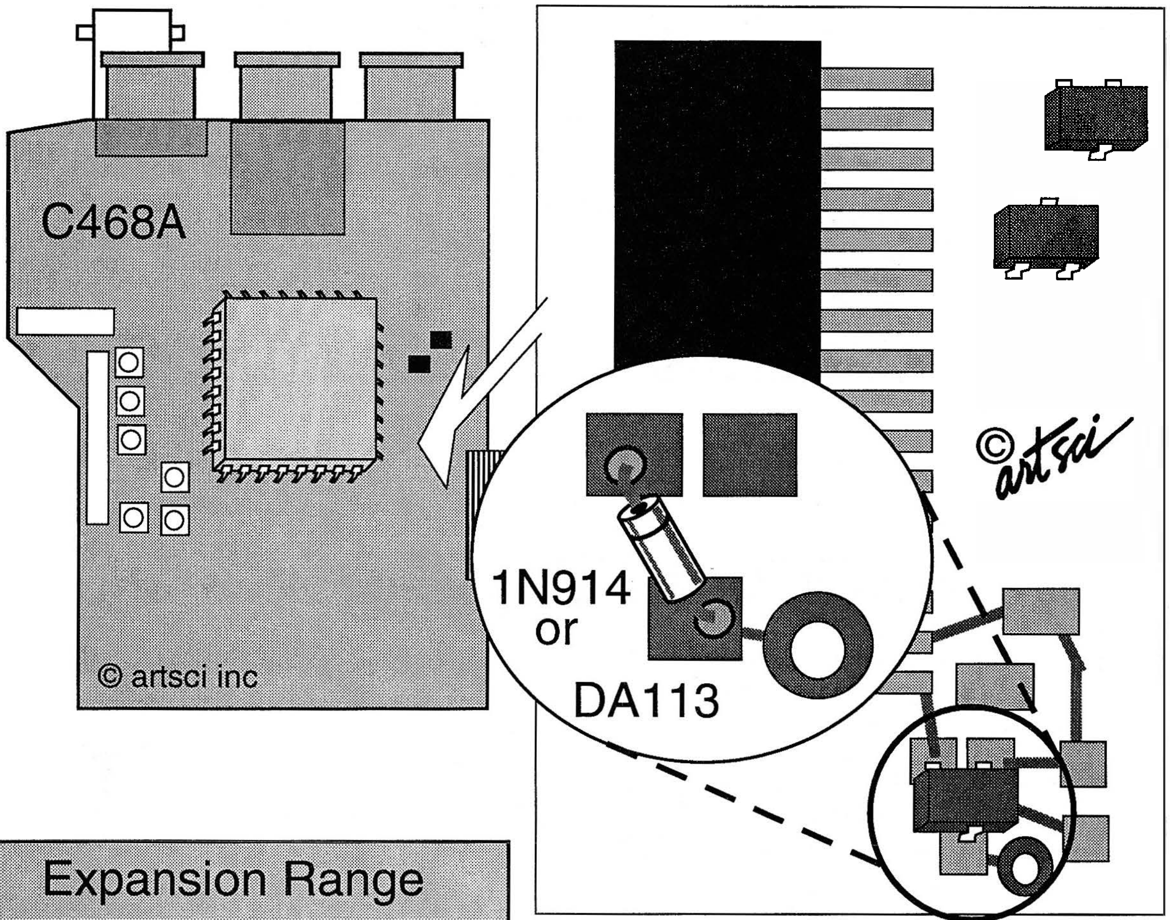
RX: 123.5 - 177 MHZ
TX: 125 - 174 MHZ



Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove two screws from the back case.
3. Remove the four screws from the battery retaining slide.
4. **Install a 1N914 or DA113 chip diode** in the pictured location.
5. Reassemble the radio.
6. Reset the microprocessor (see owners manual)

(818) 843-4080 12-4 PST, Fax:(818) 846-2298



Expansion Range

The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz . Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

DIRECT FREQENCY ENTRY

1. Press and hold [F] then [0].
2. Press and hold [F] then [0].
3. Press [8].

STANDARD

Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove screws and open the case. (Be careful. Do not break flat cables)
3. Locate microprocessor. (see Drawing)
4. Install a DA-113 **chip** diode in place. (A 1N914 may be used)
5. Reasseble the radio.
6. If required, RESET the microprocessor (see instruction manual)

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Expansion Range
340 - 399.995 MHz RX
400 - 474.000 MHZ RX/TX
801 - 980.000 MHz RX

Expanded Receive Modification

1. Tum Power on.
2. Press [ENT]
3. Press [0], [9].
4. Press [ENT]
5. Press and hold [F] then [0].
6. Press and hold [F] then [ENT].
7. Press and hold [F] then [0].
8. Press and hold [F] then [0].
9. Press and hold [F] then [8].
10. Press [CL]

STANDARD

DIRECT FREQENCY ENTRY

1. Press and hold [F] then [0].
2. Press and hold [F] then [0].
3. Press [8].

AM / FM mode switch

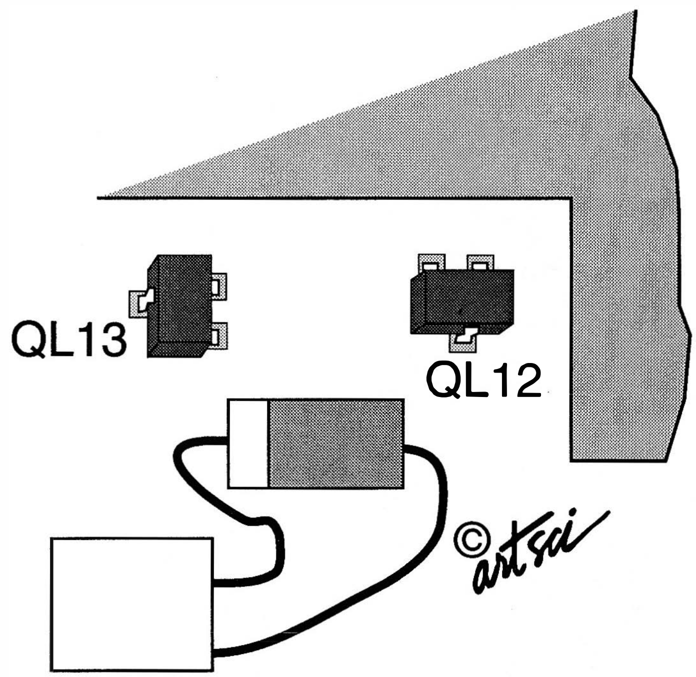
1. Press and hold [F] then [0].
2. Press and hold [F] then [2].

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Transmit Expansion

Expansion Range

The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

1. Remove Power and Antenna.
2. Remove screws and open case.
3. Locate the microprocessor board
4. Locate QL12 & QL13. (QL13 may already be missing)
5. **Remove QL12 & QL13**. (QL13 may already be missing)
6. Reassemble the radio
7. **Reset Microprocessor** (set mode 8).

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Transmit Expansion

C-508A

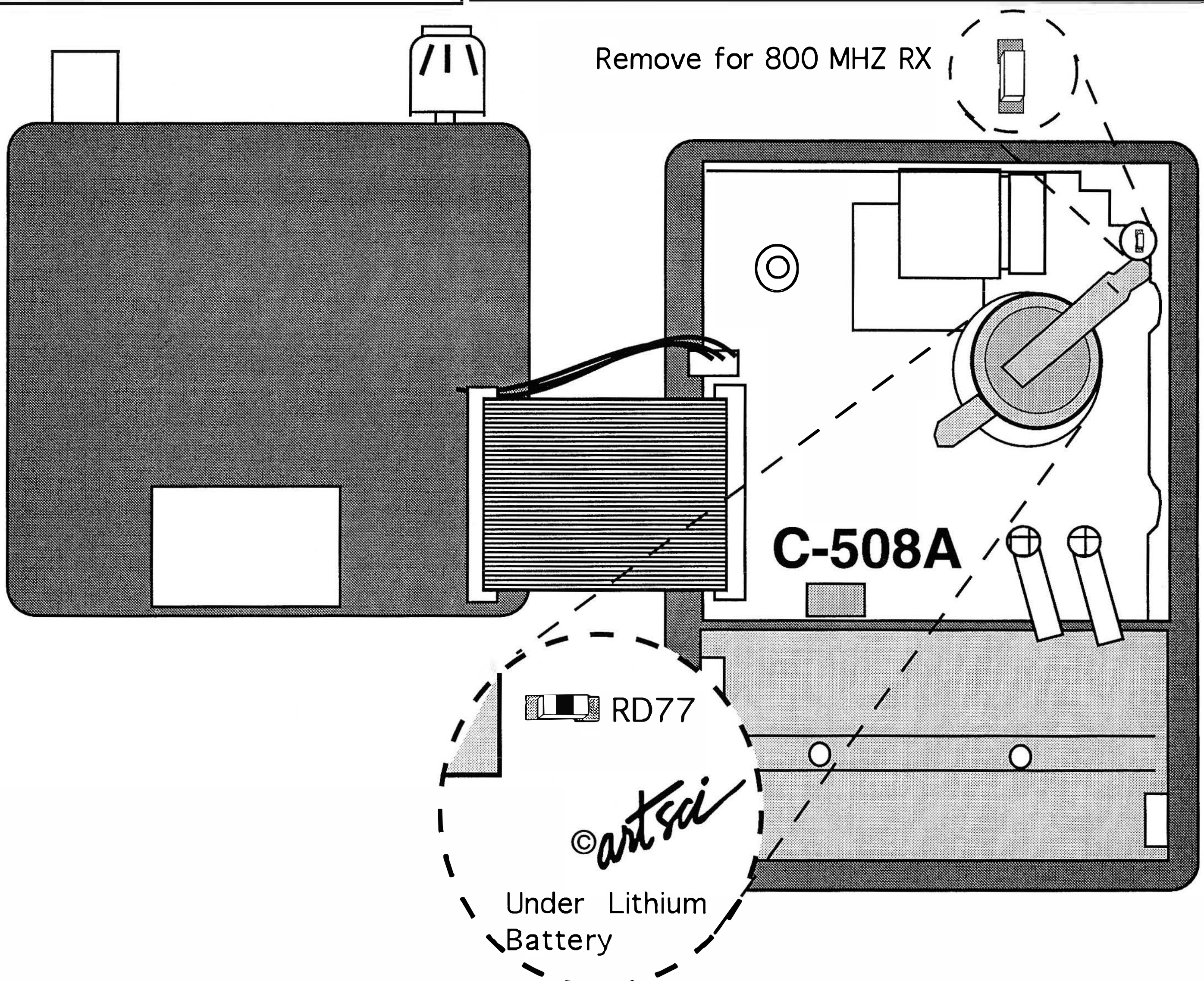
Expansion Range

115 MHz - 164 MHz.
400 MHz - 470 MHz
RX possible: 300 MHz - 399 MHz
800 MHz - 868 MHz
896 MHz - 999 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Expanded RF Modification

1. Remove Battery.
2. Remove four screws from the radio back half and open the radio.
3. Locate Control Board.
4. Locate and remove the lithium battery (memory will be erased)
5. **Locate and remove chip resistor RD77**. (see Drawing)
6. Locate and remove component (see drawing)
7. Replace lithium battery.
8. Press reset switch SD30. (see Manual for location)
9. Reassemble the radio.



Expansion Range

RX&TX - 125.75 MHz - 176.150 MHz
400 MHZ - 473.750 MHz
RX - 821 MHz - 899.9875 Mhz
900 MHz - 976 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Expanded RF Modification

1. Turn Power on.
2. Push RESET.
3. Press and hold [FUNCTION] then [0]
4. Press and hold [FUNCTION] then [ENT]
5. Press PTT Briefly.
6. Press [UHF]
7. Press and hold [FUNCTION] then [LAMP]
8. Press and hold [FUNCTION] then [0]
9. Press and hold [FUNCTION] then [CODE]
10. Press and hold [FUNCTION] then [3]
11. Press PTT Briefly.
12. Press [VHF]
13. Press and hold [FUNCTION] then [STEP]
14. Select 12.5 KHz. (Use Selector Knob)
15. Press PTT Briefly.
16. Press and hold [FUNCTION] then [8]
17. Press and hold [FUNCTION] then [8]
18. Press and hold [FUNCTION] then [7]
19. Press and hold [FUNCTION] then [7]
20. Press and hold [FUNCTION] then [MS.M]
21. Select 144.9825 MHz (Use Selector Knob)
22. Press and hold [FUNCTION] then [0]
23. Press and hold [FUNCTION] then [ENT]
24. Press PTT Briefly.
25. Press and hold [FUNCTION] then [8]
26. Press and hold [FUNCTION] then [MS.M]
27. Press and hold [FUNCTION] then [LAMP]

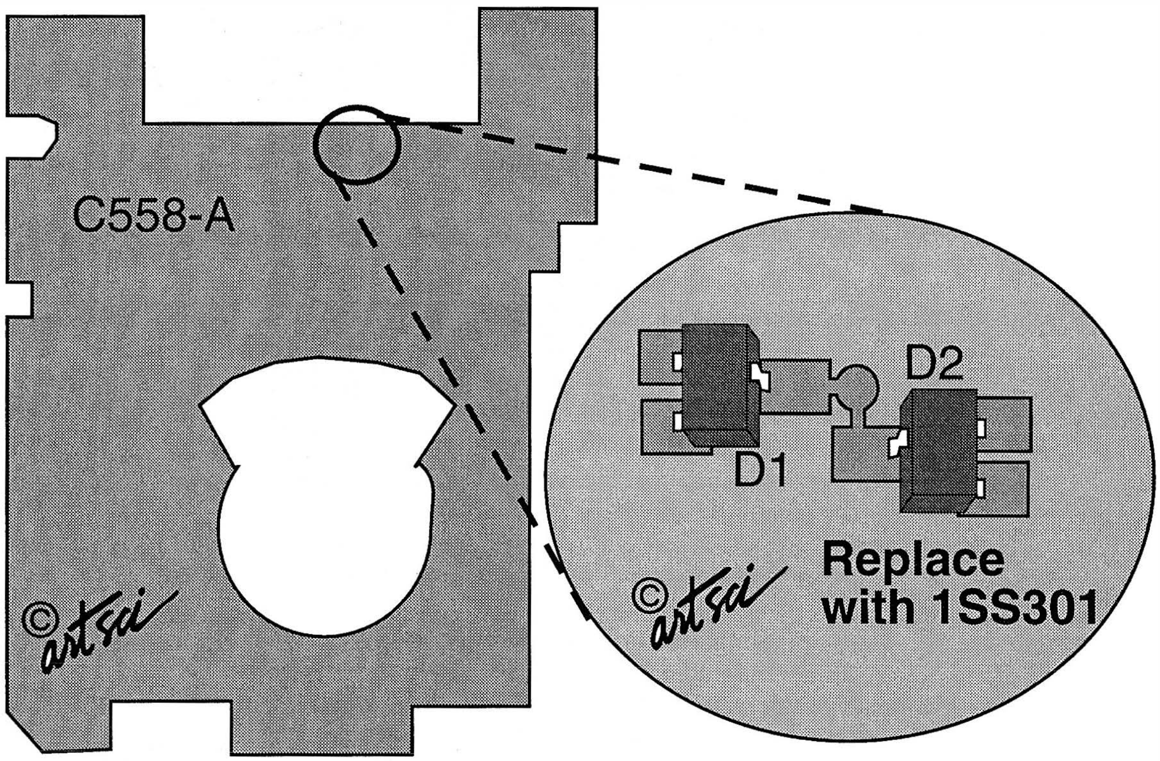
To Receive 300 - 400 Mhz or 800 - 900 MHz

Press [UHF]
Press and hold [FUNCTION] then [SET]
Press and hold [FUNCTION] then [3] to Select Bands

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

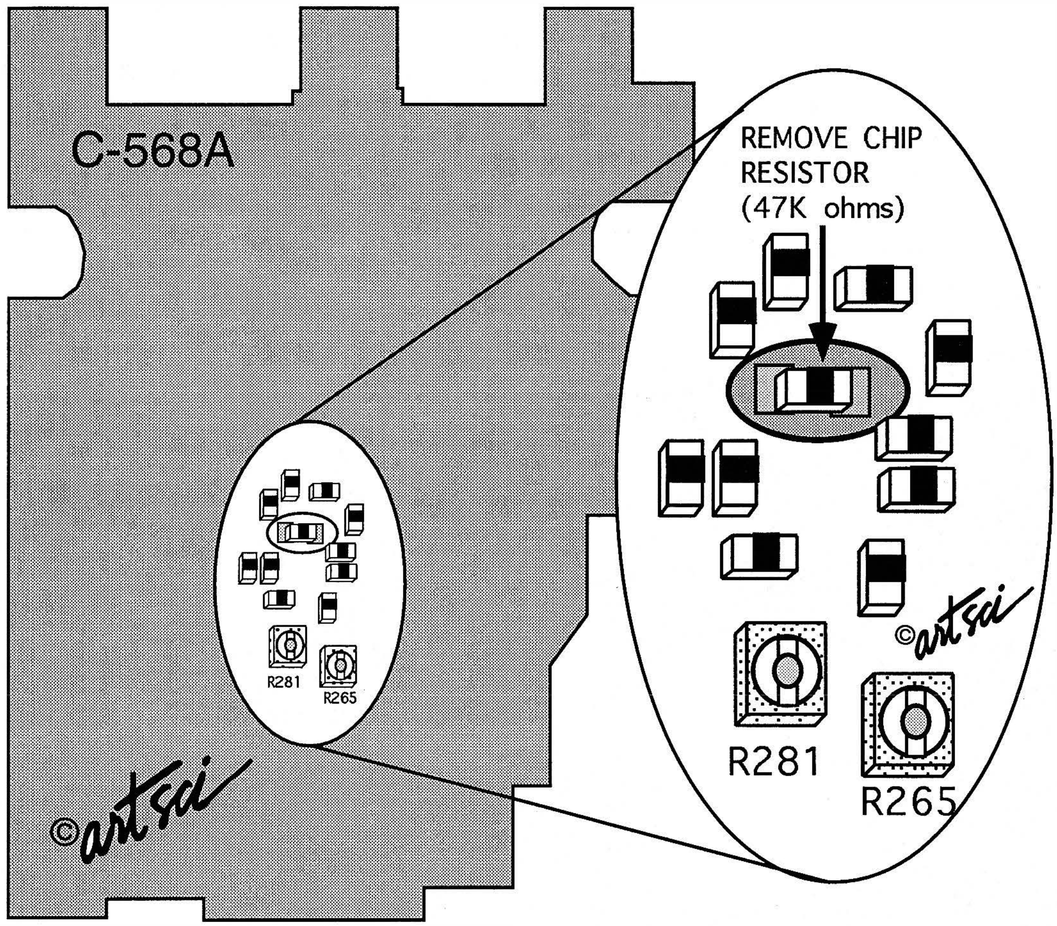
Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

1. Remove Battery and antenna.
2. Locate and remove body screws and open the case.
3. Locate and unsolder the copper plate from the back side of the LCD displat.
4. Locate and **remove chip diode D2.** (see drawing)
5. **Attach a 1SS301 chip diode in the vacant D2 position.**
   (You can order this diode direct from STANDARD)
6. Reassebmle the radio.
7. Reset the microprocessor, if required.



STANDARD

Expansion Range

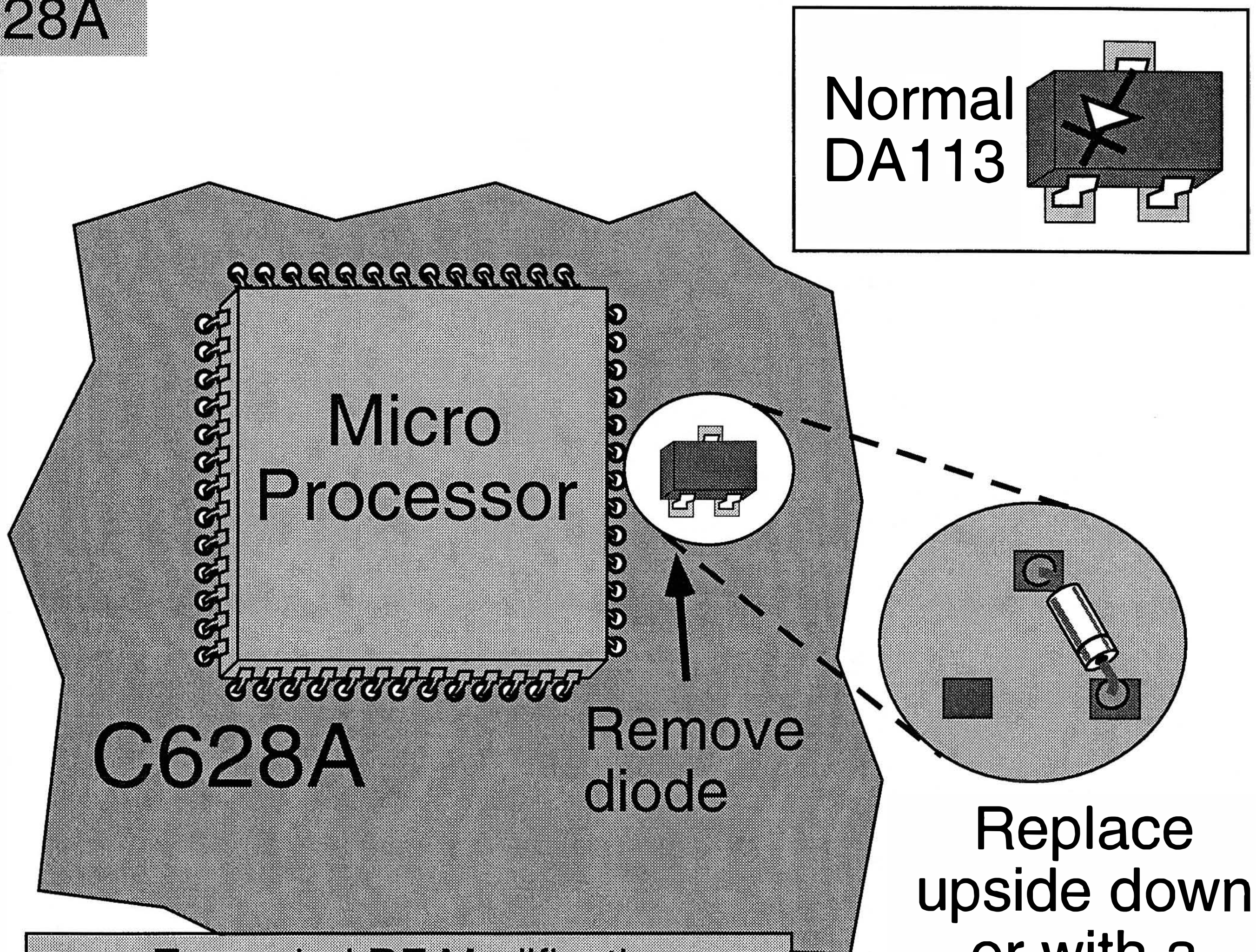
The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Expanded RF Modification

1. Remove Battery.
2. Remove Screws and open the radio.
3. Locate Control Board.
4. **Locate and remove 47K Chip resistor.** (see Drawing)
5. Reassemble the radio.
6. Reset the microprocessor. (ALL RESET, see user manual)

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

C628A



Expanded RF Modification

1. Remove Battery and antenna.
2. Locate and remove body screws and open the case.
3. Locate Microprocessor.
4. Locate DA113 chip Diode. (see drawing)
5. **Remove chip Diode DA113.**
6. **Reinstall the Diode upside down or with a 1N914 diode.**
7. Reassemble the radio.
8. Reset the microprocessor if required. (see owners manual)

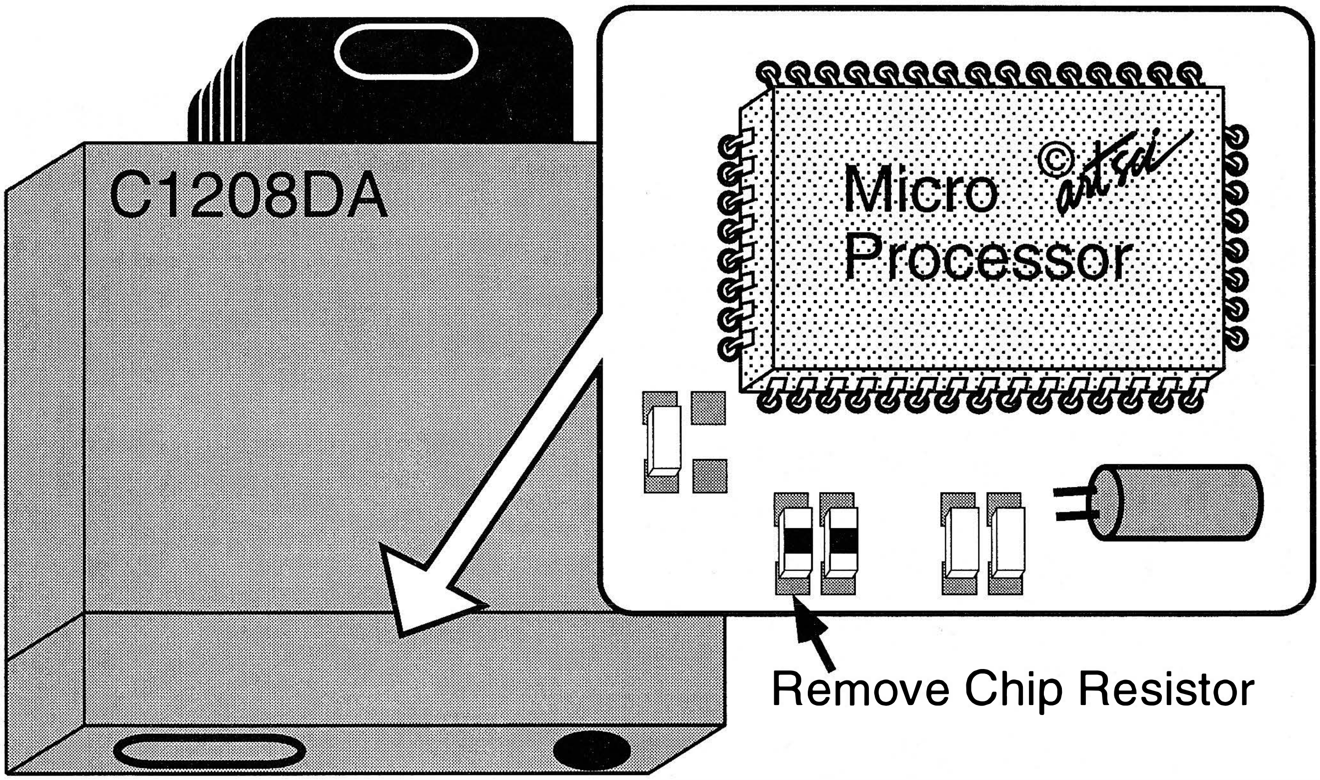
Expansion Range

The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Receive and Transmit Expansion

Expansion Range

The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

1. Remove power and antenna.
2. Remove four screws and open top cover.
3. Locate microprocessor.
4. Locate chip resistor. (see drawing)
5. **Remove chip resistor** using caution not to melt the front case plastic.
   (YOU MAY WISH TO REMOVE THE FRONT CASE FOR CLEARANCE)
6. Reassemble the radio.
7. Reset the microprocessor if required.

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Transmit Expansion
800 MHz Receive Modification

Expanded RF Modification

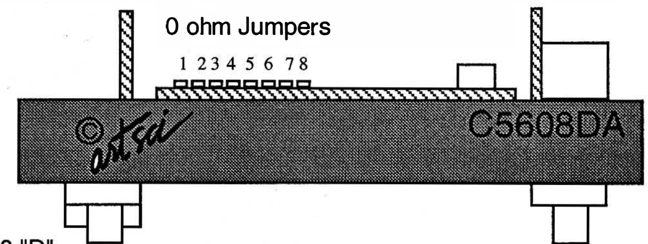
1. Remove power and antenna.
2. Remove 0 ohm resistors near the microprocessor.
   Specific data:

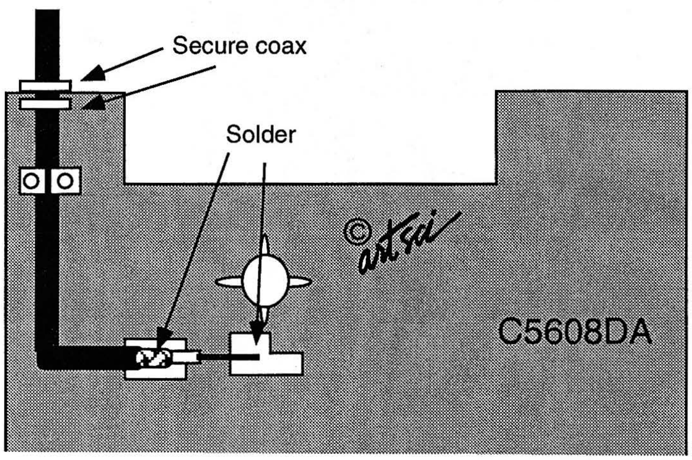
RL69 "H" symbol	400-469.996 MHz TX	250-499.995 MHz RX
RL70 "D" symbol	130-173.995 MHz TX	100-199.995 MHz RX

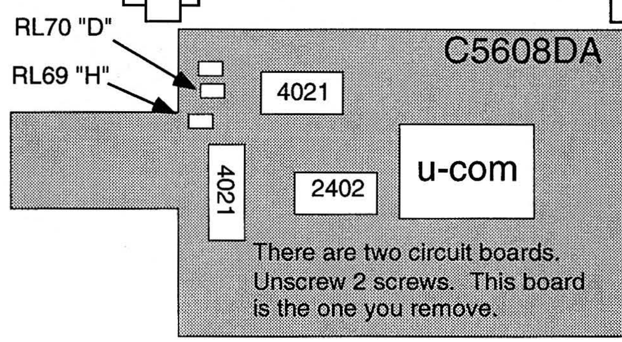
3. Reassemble the radio.
4. Reset the microprocessor (if required)

Expansion Range

The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.







Expanded RF Modification

1. Remove power and antenna.
2. Remove covers
3. Remove black tape patch under the VHF antenna connector.
4. Remove cover from transmitter (5 screws)
5. Remove screws securing the red and black power wires.
6. **Solder attach the new antenna coax as shown.**
7. Secure the coax using wire ties or other method.
8. Replace the power cable screws.
9. Replace the covers.

800 MHz activation:

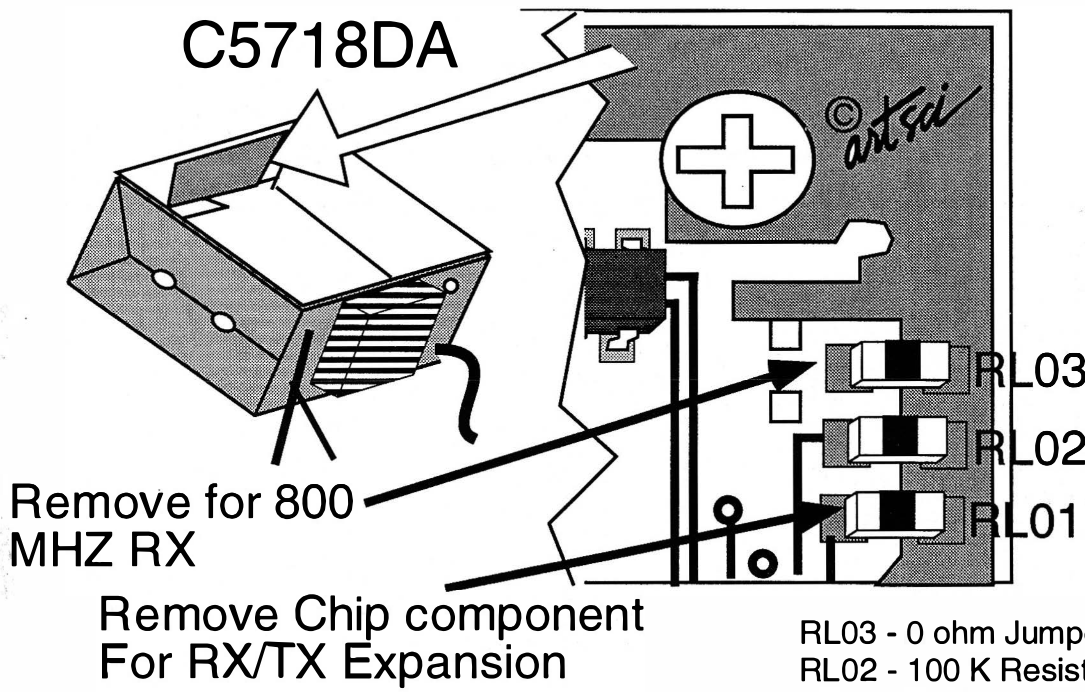
Select 440 as the main band.
Press [UP] button while pressing the rotary switch
Press [UP] button while pressing the [FUNCTION] button.
To Return to 440 - Press [DOWN] while pressing [FUNCTION] button.

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Transmit Expansion

Expansion Range

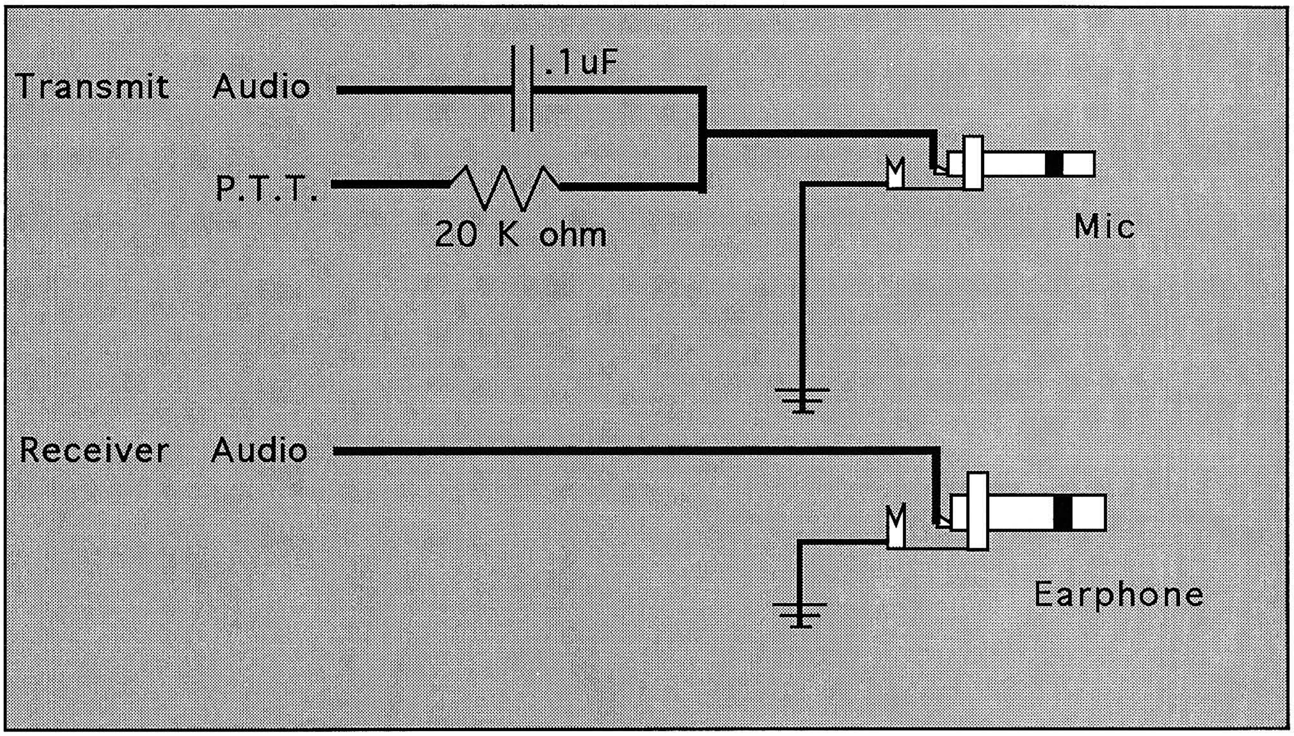
The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



RL03 - 0 ohm Jumper
RL02 - 100 K Resistor
RL01 - 0 ohm Jumper

Expanded RF Modification

1. Remove power and antenna.
2. Remove four screws and remove top cover.
3. Locae vertical board on the front of the radio.
4. Locate three BLUE chip resistors. (Right side of connector labled "CTD")
5. **Remove lower most chip resistor** (see drawing)
6. Reassemble the radio
7. Reset the microprocessor. (see owners manual)


Transmit Audio
.1uF
P.T.T.
20 K ohm
Mic
Receiver Audio
Earphone

Performance Report

Radio ______________________________ Date ____________

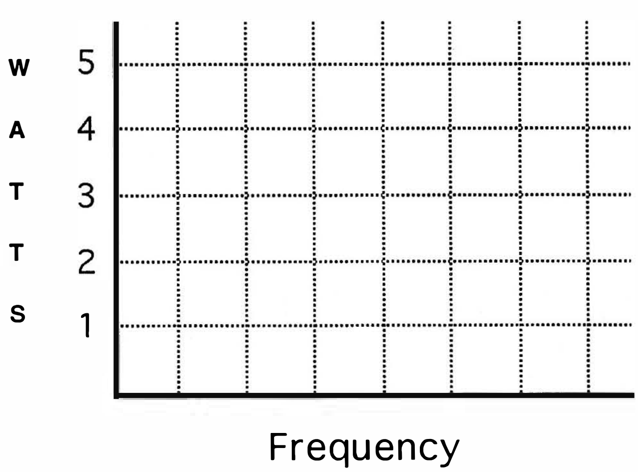
Owner : Name ____

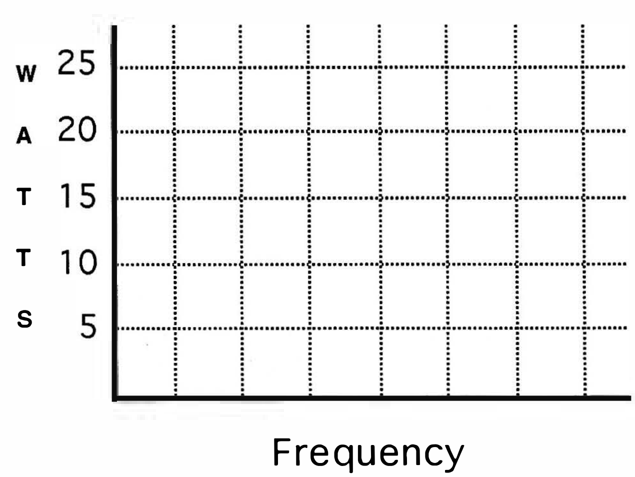
Address ______________________________________

City ____________________ St. ______ Zip ____________

Phone (   ) ______ - ____________

Description	Before	After
Power out (Low)	________ Watts	________ Watts
Power out (High)	________ Watts	________ Watts
Frequency Error (Simplex)	________ Hz	________ Hz
Frequency Error (Offset)	________ Hz	________ Hz
Receive Sensitivity (Mid-band)	________ uv	________ uv
Receive Sensitivity (_____MHz)	________ uv	________ uv
Receive Sensitivity (_____MHz)	________ uv	________ uv
PL Deviation	________ Hz	________ Hz
DTMF Deviation	________ KHz	________ KHz
Audio Deviation	________ KHz	________ KHz
Lowest usable Freq @ .5 Pwr	________ MHz	________ MHz
Highest usable Freq @ .5 Pwr	________ MHz	________ MHz





Notes

OTHER MANUFACTURES Modifications

Receive and Transmit Expansion

AR-146

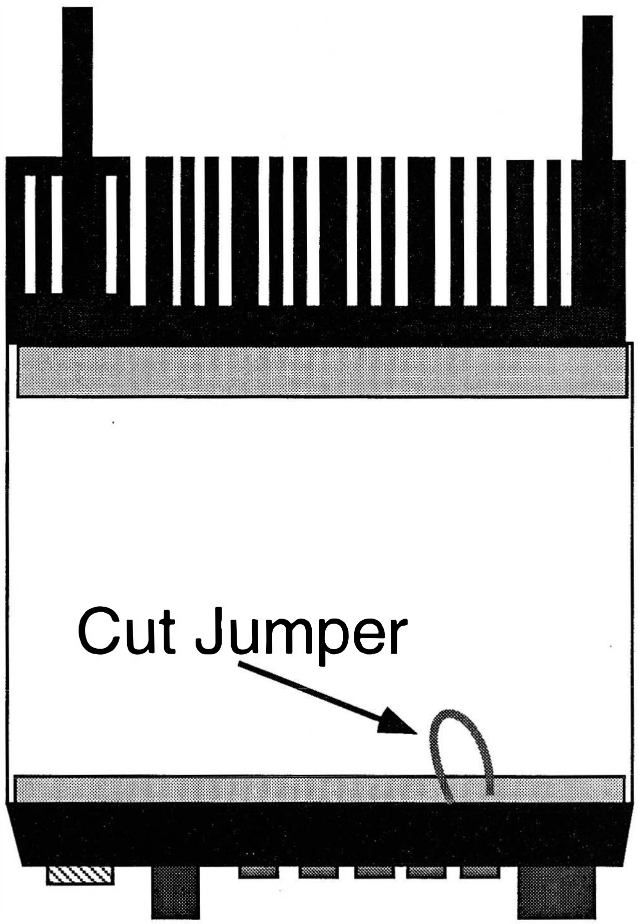
Expansion Range

125 - 174 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Expanded RF Modification

1. Remove Bottom Cover
2. Locate and cut Wire jumper
3. Reassemble the radio.



(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Expansion Range

130 - 163.995 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Expanded RF Modification

1. Press and Hold [F] and tum power on. (display will read 145.00) (This will reset all memories!!)
2. Tum Power off
3. Press and hold [3] and tum power on. (display will read 145.00)
4. Press [F] & [3]. (Display will read 10)
5. Change step to 05 by tuming dial one step.
6. Press [F] & [9]. (Display will read 00.60)
7. Press and hold [F] and tum dial until display reads 30.60 [50].
8. Release [F] key and rotate dial until the display reads 30.63 [50].
9. Press [F] & [3] and change step back to 10.
10. Press [F] & [0]. (display should read 145.00)
11. Press [7]. (display should read ".")
12. Press [3] [0] [6] [3] transmit & receive expansion
    or
    Press [3] [0] [7] [3] receive expansion only.
13. Press [*] (display should read 130.00)
14. Press [F] & [9] (display should read 30.63 [50])
15. Press and hold [F] and tum dial until display reads 00.63 [50].
16. Release [F] and tum dial until it reads 00.60.
17. Press [*]. (display should read 130.00)
18. Tum radio off and back on.

Note : Use [F] and [MHz] key to change frequency stepping.

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Transmit Expansion

Expansion Range

430 - 463.995 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Expanded RF Modification

1. Press and Hold [F] and turn power on. (display will read 440.00 or 433.00) (This will reset all memories!!)
2. Turn Power off
3. Press and hold [3] and turn power on. (display will read 440.00)
4. Press [F] & [3]. (Display will read 10)
5. Change step to 05 by turning dial one step.
6. Press [F] & [9]. (Display will read 05.00)
7. Press and hold [F] and turn dial until display reads 30.60 [50].
8. Release [F] key and rotate dial until the display reads 30.63 [50].
9. Press [F] & [3] and change step back to 10.
10. Press [F] & [0]. (display should read 440.00)
11. Press [7]. (display should read ".")
12. Press [3] [0] [6] [3] transmit & receive expansion
13. Press [*] (display should read 130.00)
14. Press [F] & [9] (display should read 30.63 [50])
15. Press and hold [F] and turn dial until display reads 05.63 [50].
16. Release [F] and turn dial until it reads 05.00.
17. Press [*]. (display should read 430.00)
18. Turn radio off and back on.

To change frequency coverage:

Press [F] & [0]
Press [7]. (display should read ".")
Press [0] [0] [7] [9] for 400 - 479.995 MHz coverage!!
Press [*]

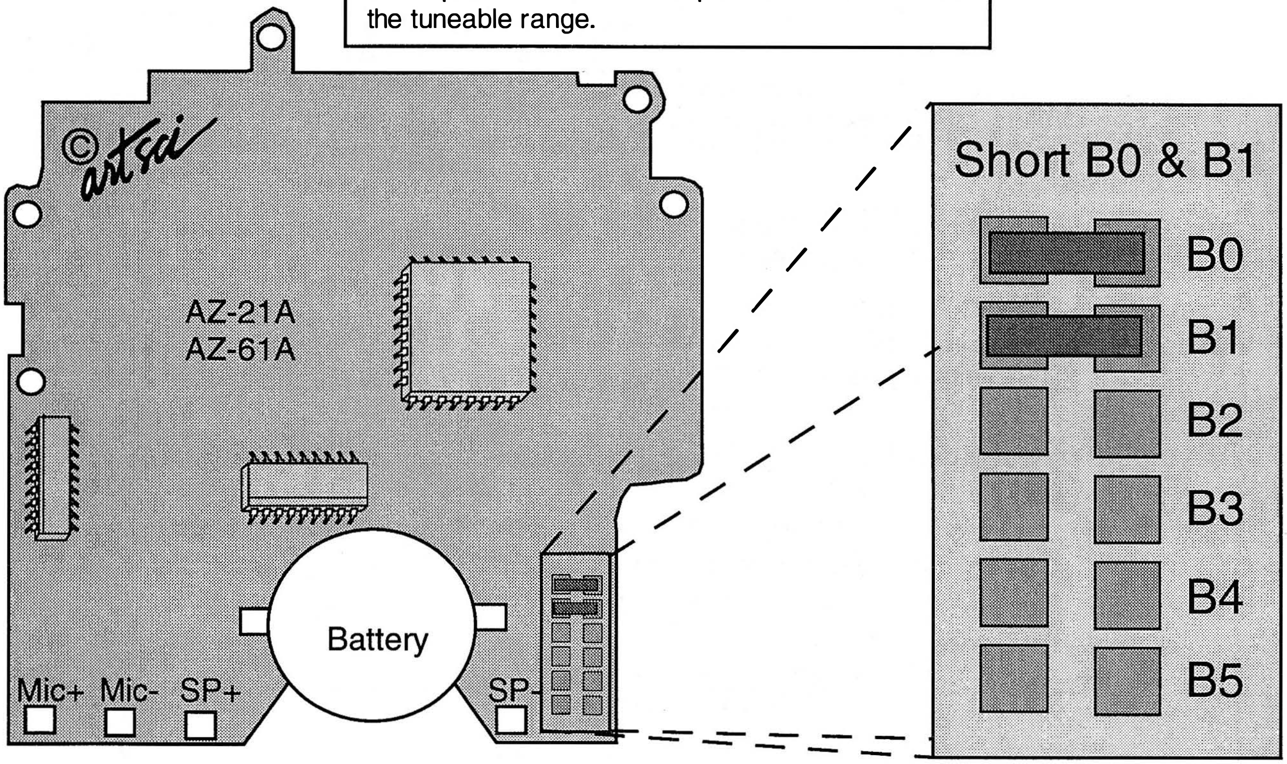
Note : Use [F] and [MHz] key to change frequency stepping.

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Expansion Range

TX & RX - 136 Mhz - 164 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

1. Remove Power and Antenna.
2. Remove Speaker & Squelch knobs
3. Remove battery rail screws
4. Remove three back cover screws.
5. Remove top cover and rubber gasket
6. Separate radio. (open like a book)
7. Remove three screws from right hand board and move aside
8. Locate lower board and the solder pads B0 through B5
9. Locate and **solder bridge pads B0 & B1.**
10. Reassemble the radio.
11. **Reset the microprocessor**
    (Hold down the [CLR] key and tum the radio on)

OTHER

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Transmit Expansion

PCS-6000H
PCS-7000H
PCS-7500H

Expansion Range

138MHz - 160 Mhz. (6000 & 7000)
46.5 MHz - 54 MHz (7500)

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Expanded RF Modification

1. Remove Power and Antenna.
2. Remove the Top and Bottom covers.
3. Locate and remove the four flat Phillips screws that secure the front panel to the chassis.
4. Locate and remove the four small Phillips screws securing the display PC Board to the chassis.
5. Locate and remove the one Phillips screw above the Microphone connector.
6. Carefully remove the PC board. CAUTION: Do not bend the PIN connectors.
7. **Locate and remove Diode D-207.** (Unsolder or Cut the diode away)
8. Reassemble the radio.

PCS-7xxx CPU RESET

1. Locate and remove four screws and remove the bottom cover.
2. Place the radio with the front of the radio away from you.
3. Locate the board behind the front panel and the 1/2 inch square outlined in WHITE in the upper left hand comer of the board. (the word "RESET" is marked inside the quare.
4. Locate the two 1/8" copper pads.
5. With the power on, short the two copper pads together. (A beep will sound)
6. Reassemble the radio.

Expansion Range

The Exact range of this radio is not know as of press time.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Expanded RF Modification

1. Tum the radio on.
2. Set display to 12.3456
3. Press [BAND] button.
4. Tum radio off.
5. Tum radio on.

Note: You must perform these steps within 3 seconds to properly reset the radio.

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Expansion Range

140 Mhz - 156 Mhz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Expanded RF Modification

1. Remove Power and Antenna.
2. Remove the cover.
3. **Press the RESET Button.**
4. Enter the new limits on the front panel switch.
5. Reassemble the radio.

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Expanded RF Modification

1. Remove Power and Antenna.
2. Remove screws and open the case.
3. **Connect diode D-21 (ECG-519) to Module INT-2033.**
4. Reassemble the radio.

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

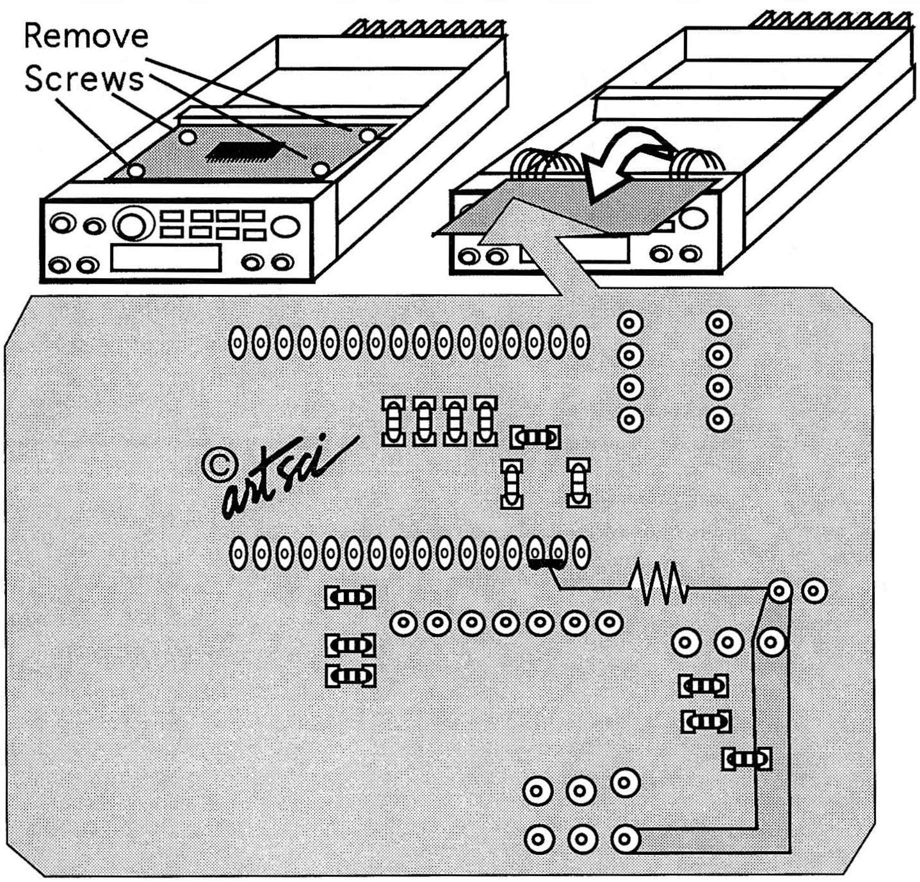
Expansion Range

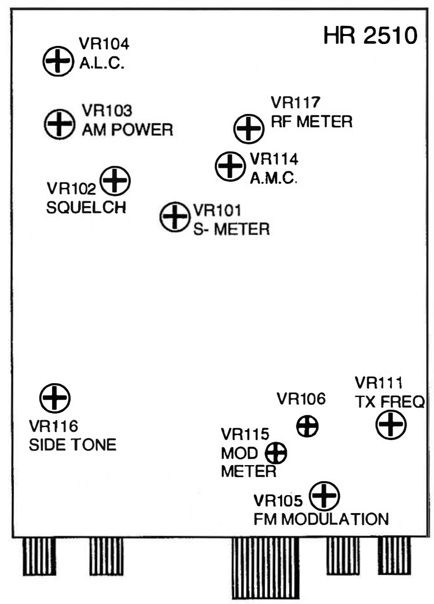
26 MHz - 29.99 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Expanded RF Modification

1. Remove Power and Antenna.
2. Remove screws and open the case.
3. Locate the Synthesizer board.
4. Pins 34 & 35 are grounded together on the underside of the synthesizer board. Cut the traces that connect these two pins to ground. (Cut all traces to these pins)
5. Solder one side of a 10K resistor to the connecting point of pins 34 & 35.
6. Connect the other leg of the 10 K resistor to + 5 volts. (where R181 & 187 are connected together.
7. Reassemble radio





(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Expanded RF Modification

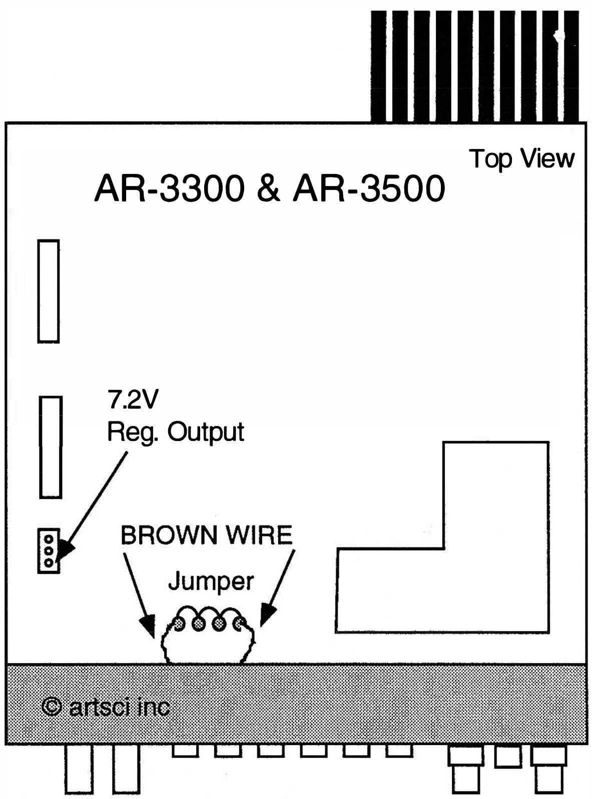
1. Tum radio on and enter the following:

[ENTER] [1 CH] [ENTER] [MANUAL] [ENTER] [100 HZ DOWN]
[ENTER] [MEMORY] [MANUAL] [SCAN] [PROGRAM]
[100 HZ UP] [ENTER] [ENTER]
PUSH [1 MHZ UP] UNTIL 29.933.0 APPEARS
[ENTER] [SCAN DOWN] [ENTER] [2 CH] [ENTER]
[SCAN DOWN]
OPEN THE SQUELCH

The radio will now scan down in 10kHz steps. Store desired Frequencies into memory channels for later use.

OR

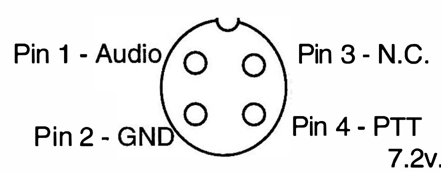
Solder jump the 3 pins located on the back side of the circuit board near the front center.



Expansion Range

The Exact range of this radio is not known as of press time.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



(818) 843-4080 12-4 PST, Fax:(818) 846-2298

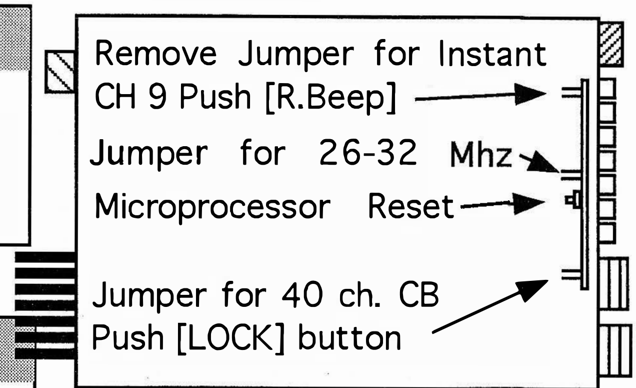
Receive and Transmit Expansion

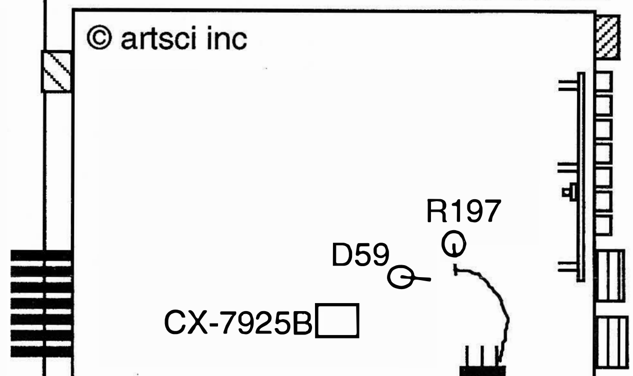
Clarifier Fine Tune (Tracks both TX & RX)
Expanded Range
CB "Style" operation
Instant Channel 9

RCI-2950
RCI-2970

Expanded RF Modification

1. Remove Power and Antenna.
2. Remove screws and open the case.
3. Locate Jumper J1 & J2.
4. **Move Jumper from J1 and place it on Jumper J2**
5. Reassemble the radio.



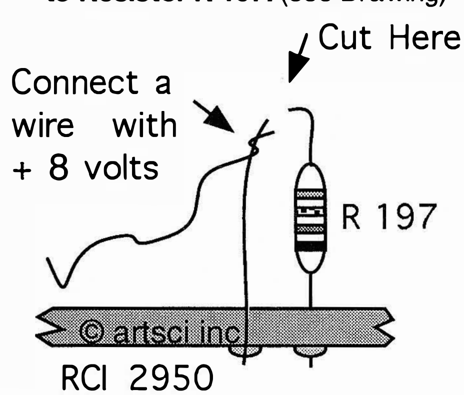


Alignment Procedure

1. Set the frequency to 26.000 MHz (any mode)
2. Connect a DC voltmeter between J13 and ground.
   (The chassis is not grounded. You can find ground on the main circuit board)
   Adjust L17 to obtain a 1.0 V reading.
3. Set the service monitor to 10.240 MHz, SSB mode.
   Sniff at X2 and zero beat using VC2.
4. Remove the shorting bar located near the final amplifier transistors and key the radio.
   Sniff X2 and adjust VR21 to zero beat.
5. Repeat step 4 for receive at X1.
6. Set the service monitor to 10.695 MHz.
   Key the transmitter and sniff X3 in either AM or FM.
   Adjust L27 and zero beat.
7. Un-key the radio.
   Set the service monitor to 10.6925 MHz, USB mode.
   Key the transmitter and adjust L29 to zero beat.
   Un-key.
8. Un-key the radio.
   Set the service monitor to 10.6975 MHz, LSB mode.
   Key the transmitter and adjust L28 to zero beat.
   Un-key.
9. Replace shorting bar and set the radio to 28.0500 MHZ FM mode.
10. Inject an on-frequency FM signal into the radio and tune for best SINAD by adjusting L8, L9, L11, L12, L14, L4, L3, L5, L6 and L7.
    Repeat this step until SINAD reading of 12db or better with a .2 uV input.
11. Key the radio in UBS with a 1 KHz tone at 30 mV at the mic input.
    Adjust VR12 for maximum, approximately 30 W.
12. Adjust VC3, L34, L43, L46, L47, L48 and L19 for peak power out.
    Adjust VR12 to set max power to 25 watts.
13. Set mode to FM and key the radio.
    Set the output power to 10 watts using VR13.
14. Set the mode to AM and adjust VR14 for 90% modulation.

Fine Tune

1. **Remove Diode D59.**
2. **Cut lead on Resistor R197.** (see Drawing)
3. **Apply +8 volts from regulator to Resistor R 197.** (see Drawing)



OTHER

Receive and Transmit Expansion

Expansion Range

400 - 469.995 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Expanded RF Modification

1. Press [F] and turn power on, then off (RESET Radio)
2. Press [3] and turn power on. (400 - 469 MHz RX)
3. Press [F] &[0] then set CTCSS to 88.5 MHz (use rotary knob)
4. Press [F] & # then set page code to (memory 0 = C000)
5. Press [F] & [3] then set channel step to 5 KHz
6. Press [F] & [9] then keyin 6.1 MHz
7. Press [F[& [0] then [8]
8. Press the [*/ENT] key

Note: during testing, these steps needed to be performed multiple times

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Expansion Range

1.7 MHz - 30 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Expanded RF Modification

1. Remove Power and Antenna.
2. Remove the Top cover.
3. **Locate and clip small jumper labeled "HAM".**
8. Reassemble the radio.

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Performance Report

Radio ______________________________ Date____________

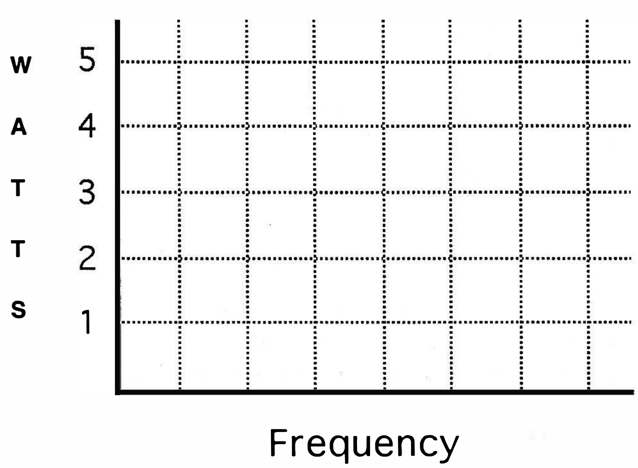
Owner : Name ______________________________________

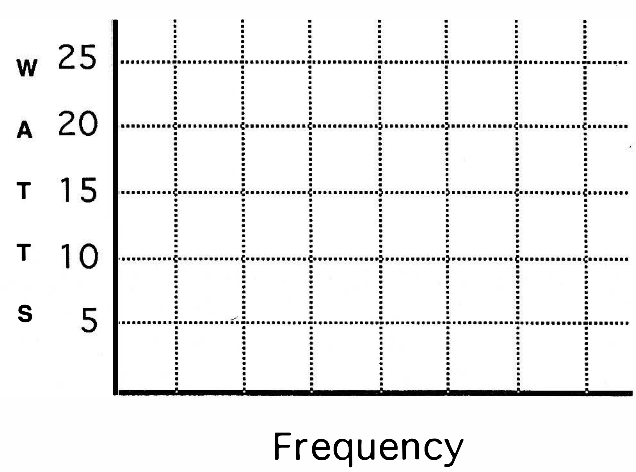
Address ______________________________________

City ____________________ St. ______ Zip ____________

Phone ( ) - ______________________________________

Description	Before	After
Power out (Low)	________ Watts	________ Watts
Power out (High)	________ Watts	________ Watts
Frequency Error (Simplex)	________ Hz	________ Hz
Frequency Error (Offset)	________ Hz	________ Hz
Receive Sensitivity (Mid-band)	________ uv	________ uv
Receive Sensitivity (____MHz)	________ uv	________ uv
Receive Sensitivity (____MHz)	________ uv	________ uv
PL Deviation	________ Hz	________ Hz
DTMF Deviation	________ KHz	________ KHz
Audio Deviation	________ KHz	________ KHz
Lowest usable Freq @ .5 Pwr	________ MHz	________ MHz
Highest usable Freq @ .5 Pwr	________ MHz	________ MHz





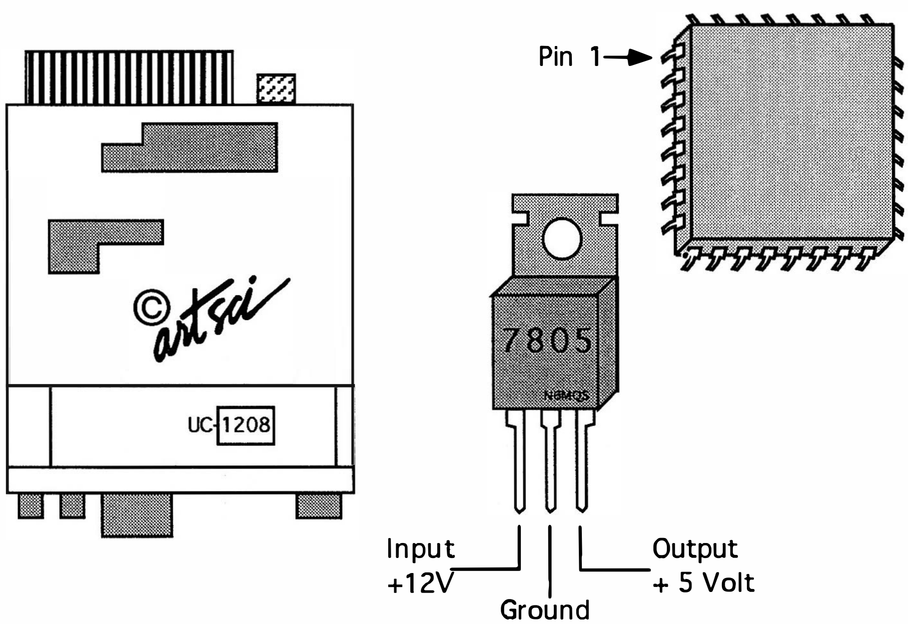
Expansion Range

The Exact range of this radio is not known as of press time.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Expanded RF Modification

1. Remove Power and Antenna.
2. Remove screws and open the case.
3. Locate synthesizer board on the bottom of the radio.
4. If your radio has microprocessor # UC-1208
   - Unsolder and lift pins 28 & 29 of the microprocessor.
     - You may wish to leave the pin soldered and etch the ground trace
     - Go to instruction #6
5. If your radio's microprocessor is NOT a UC-1208
   - Unsolder and lift pins 20 & 21 of the microprocessor.
     - You may wish to leave the pin soldered and etch the ground trace
     - Go to instruction #6
6. Connect the lifted pins together and jumper these pins to +5 volts with a 10K resistor
   - +5 volts can be found on the 7805 voltage regulator
   - or
   - from the Cap. right next to pins 28 & 29.
7. Reassemble the radio.



OTHER

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Transmit Expansion

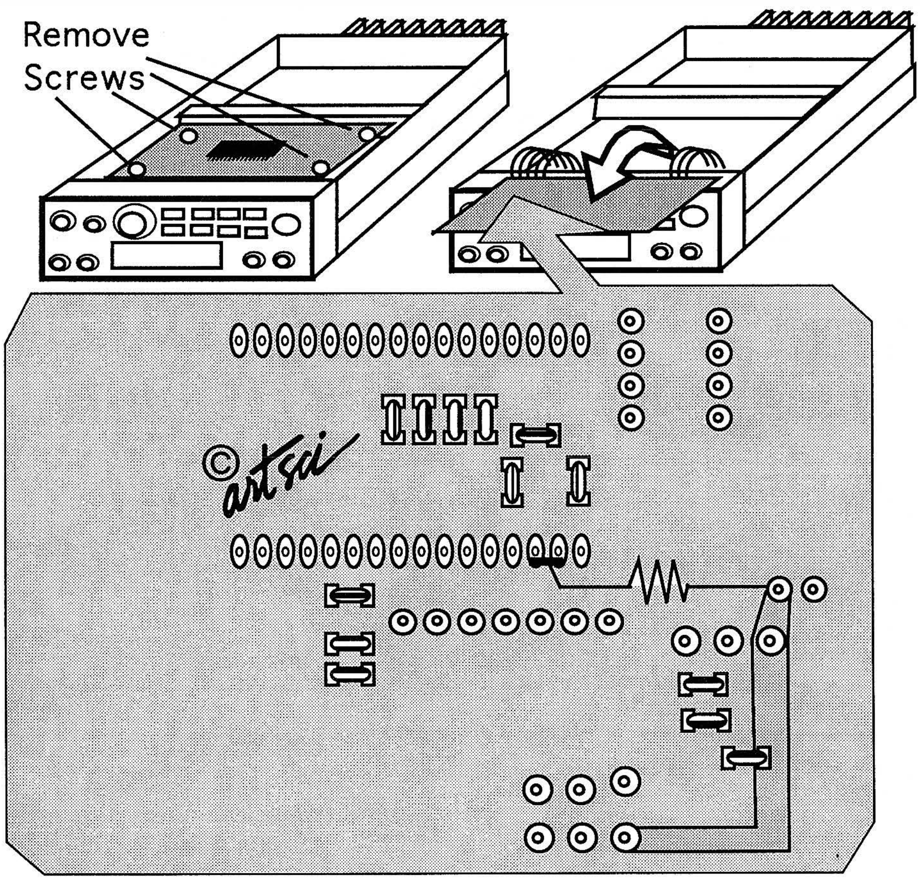
Expansion Range

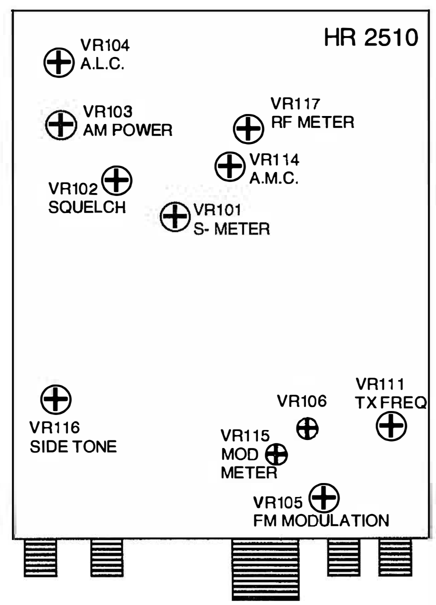
26 MHz - 29.99 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Expanded RF Modification

1. Remove Power and Antenna.
2. Remove screws and open the case.
3. Locate the Synthesizer board.
4. Pins 34 & 35 are grounded together on the underside of the synthesizer board. Cut the traces that connect these two pins to ground. (Cut all traces to these pins)
5. Solder one side of a 10K resistor to the connecting point of pins 34 & 35.
6. Connect the other leg of the 10 K resistor to + 5 volts. (where R181 & 187 are connected together.
7. Reassemble radio



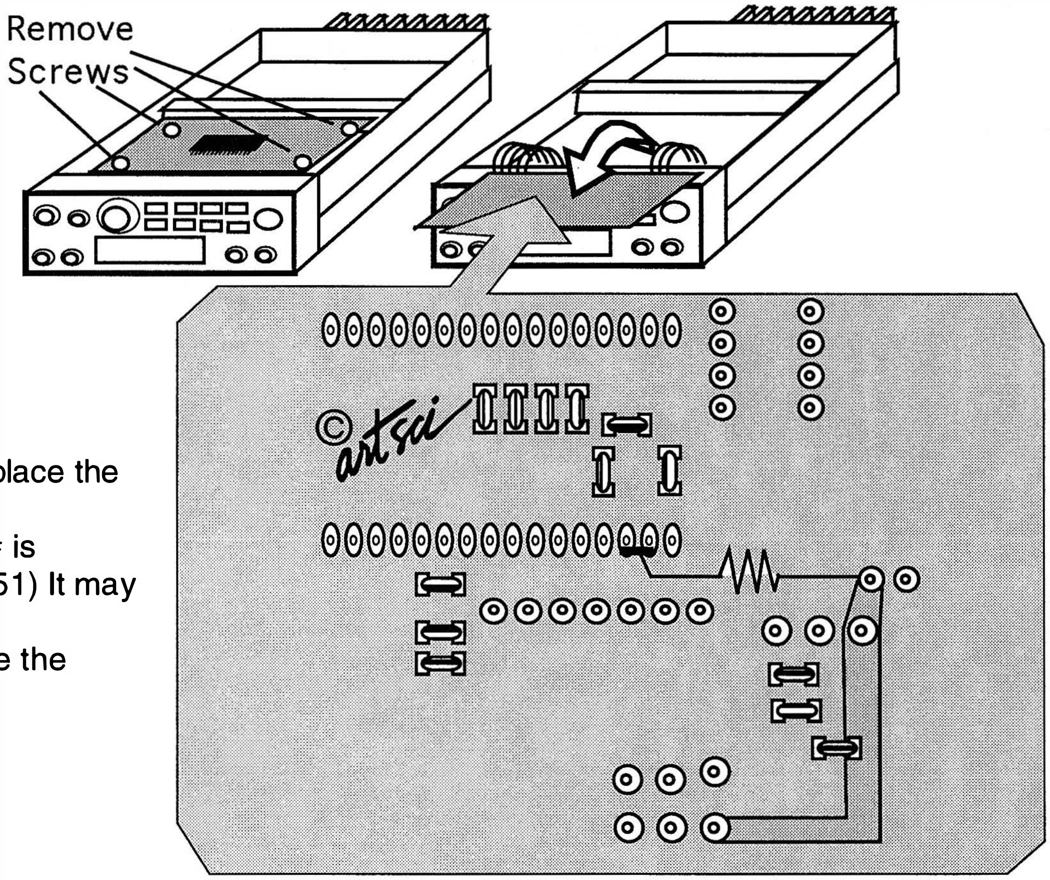


Receive and Transmit Expansion

Expansion Range

26 MHz - 29.99 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



You will need to replace the rnicroprocessor. Replacement part # is **UC-1250.** (NOT 1251) It may be available from Uniden.You will lose the repeater offset.

Expanded RF Modification

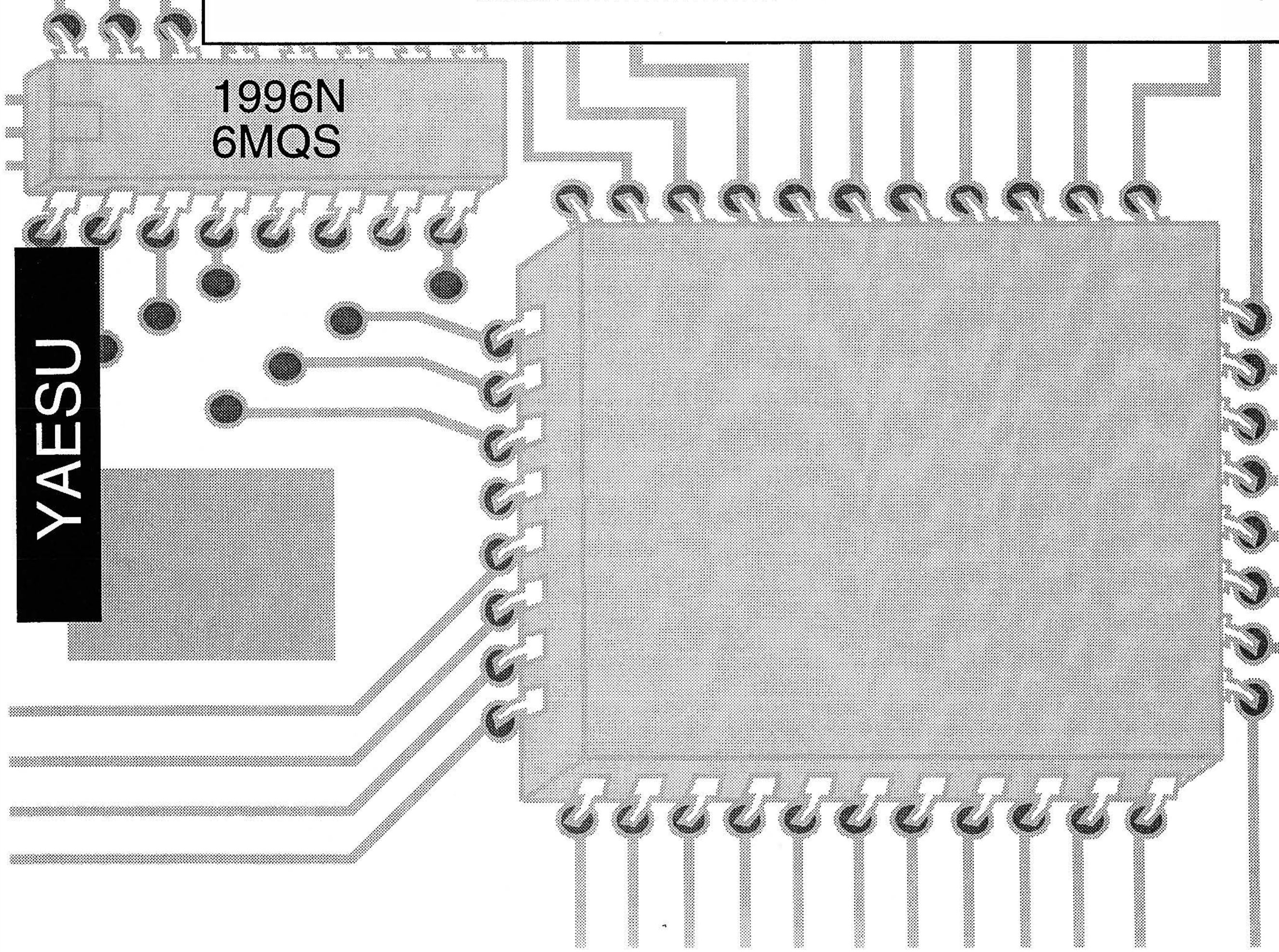
1. Remove Power and Antenna.
2. Remove screws and open the case.
3. Locate the Synthesizer board.
4. Pins 34 & 35 are grounded together on the underside of the synthesizer board. Cut the traces that connect these two pins to ground.
5. Solder one side of a 10K resistor to the connecting point of pins 34 & 35.
6. Connect the other leg of the 10 K resistor to + 5 volts. (where R181 & 187 are connected together.
7. Reassemble radio

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Yaesu Radio Modifications

YAESU

Yaesu Radio Modifications

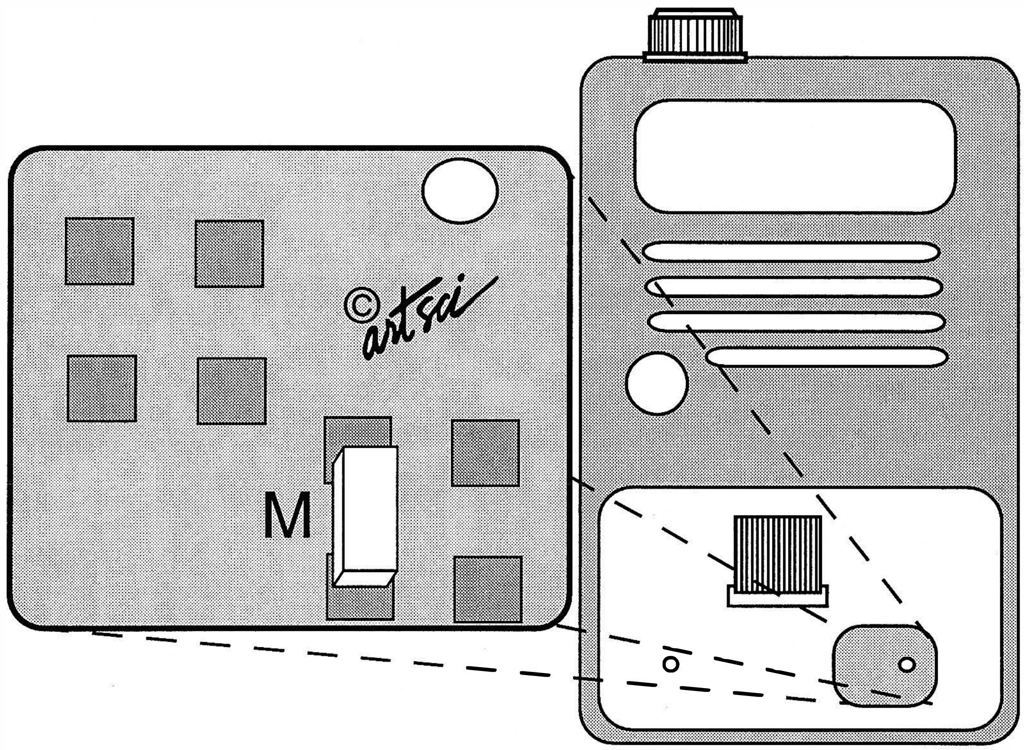


Receive and Transmit Expansion

Expansion Range

140 Mhz - 174 Mhz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

1. Remove the battery and the antenna.
2. Remove the 2 screws under the "N-Cd" Sticker.
3. Carefully lift the keypad and locae the jumper pads.
4. Locate and **unsolder the 0 ohm resistor at location "M"**
5. Reassemble the radio.
6. Reset the microprocessor.
   (Press and hold (Top-Notch) and [LAMP] button and tum the radio on)

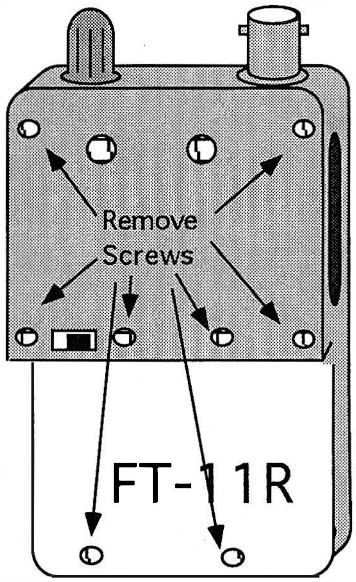
up FREQ VFO + Lamp + top

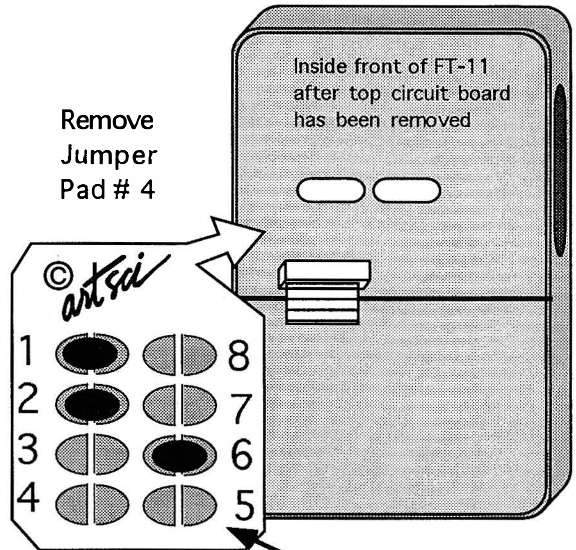
(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Transmit Expansion

Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.





Add Jumper #5 for Tone Burst.

To activate Tone Burst: Press [Monitor] & [PTT} at the same time.

Squelch adjustment

Press and hold [CALL], [UP vol] & [DOWN vol] and tum the radio on.
Press [UP MHz] button 3 times. The display will show SQL TI.
Inject a signal or tune to a strong signal (weather channel etc.)
Press [F] Button for 1/2 second this sets the level. ("AD" will blink on display)
Press the [MR] key to set the level
Press [CALL] to store the level in EEPROM memory.

Expanded RF Modification

1. Remove Battery and Antenna & belt clip.
2. Remove Screws from the back of the radio. See Drawing.
   (note location of battery release & hand strap clip, they will fall out)
3. Open radio and remove silver battery shield.
4. Remove two silver screws from top circuit board (below speaker/mic connector)
5. Gently pry top and bottom circuit boards apart.
6. Locate and **remove solder from pad #4.**
7. Reassemble the radio. Remember the battery clip and hand strap clips.
8. Reset the microprocessor.
   (Press and hold [UP] & [DOWN] arrow keys and tum the radio on.)
   (Press [MR], [VFO] & [2] and tum the radio on.)

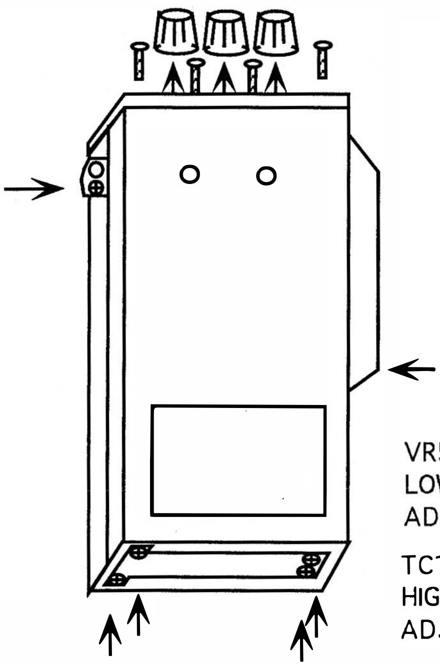
Expansion Range

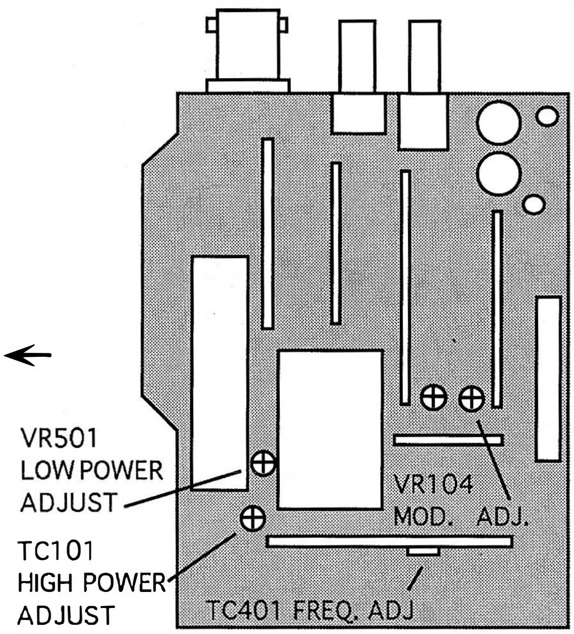
TX/RX: 140 MHz - 163.995 MHz

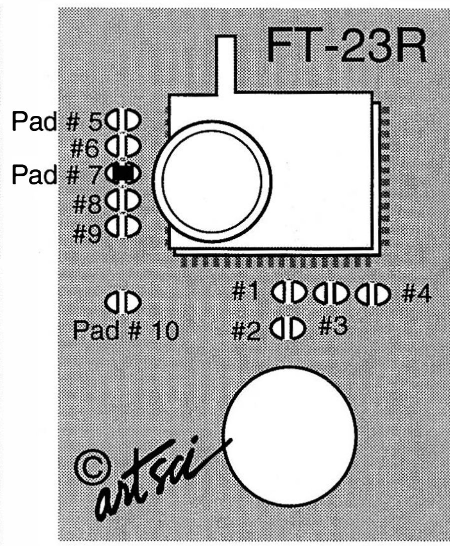
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Repeater Offset control:

1. PRESS AND HOLD [RPT] & TURN ON THE RADIO.
2. DIAL OFFSET & PRESS [RPT]







Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove control knobs, screws, top panel, battery mounting track & body screws and open Radio
3. **Remove solder bridge from Pad # 7**
4. Reassemble radio.

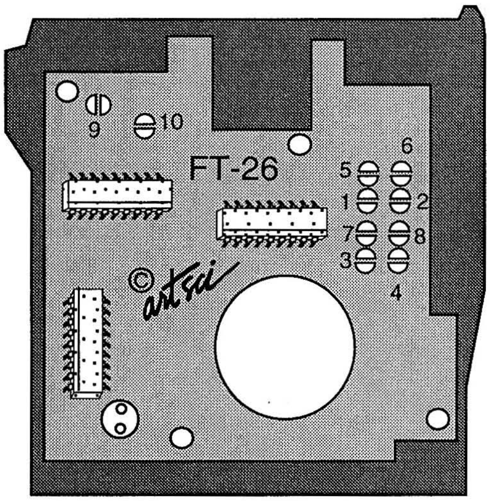
Solder Pad functions

Pad #1	Filter for 140-164 RX
Pad #2	Filter for 164-?? RX
Pad #3&4	Step selection 20 or 25 kHz 3&4 unsoldered = 10 kHz step
Pad #5	5 MHz offset
Pad #6	1.6 MHz offset 5&6 unsoldered = 600 kHz offset
Pad #7,8&9	Band selections
Pad #10	Unknown

SOLDAS
1
11
7
13
DES SOLDAR
9

YAESU

Receive and Transmit Expansion



Expansion Range

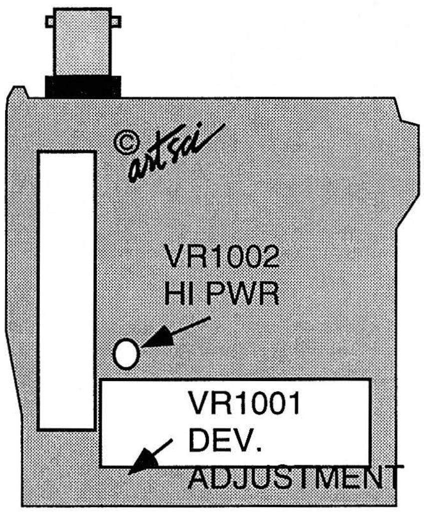
135 MHz - 174 MHz

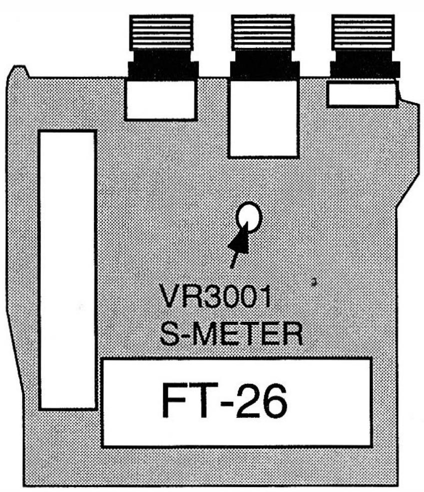
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove the 4 screws holding the battery track.
3. Remove the 2 screws in the back case.
4. Carefully separate the front cover.
5. Locate and **remove solder on Jumper pad 10.** (on control board)
6. Solder jump pads 1, 3, 7 and 8.
7. Reassemble the radio.
8. Turn radio on and each channel indicator will blink.
9. Enter the following frequencies. (use the [F] & up arrow keys)

CH. 1	135.000	Press [D/MR] Lower Rx limit
CH. 2	174.000	Press [D/MR] Upper Rx limit
CH. 3	135.000	Press [D/MR] Lower Tx limit
CH. 4	174.000	Press [D/MR] Upper Tx limit





Reset Commands

Soft RESET

Press and hold [T] & [REV] and turn power on.

Master RESET

Press and hold [D/MR] & [T] & [REV] and tum radio on, then enter band Limits below.

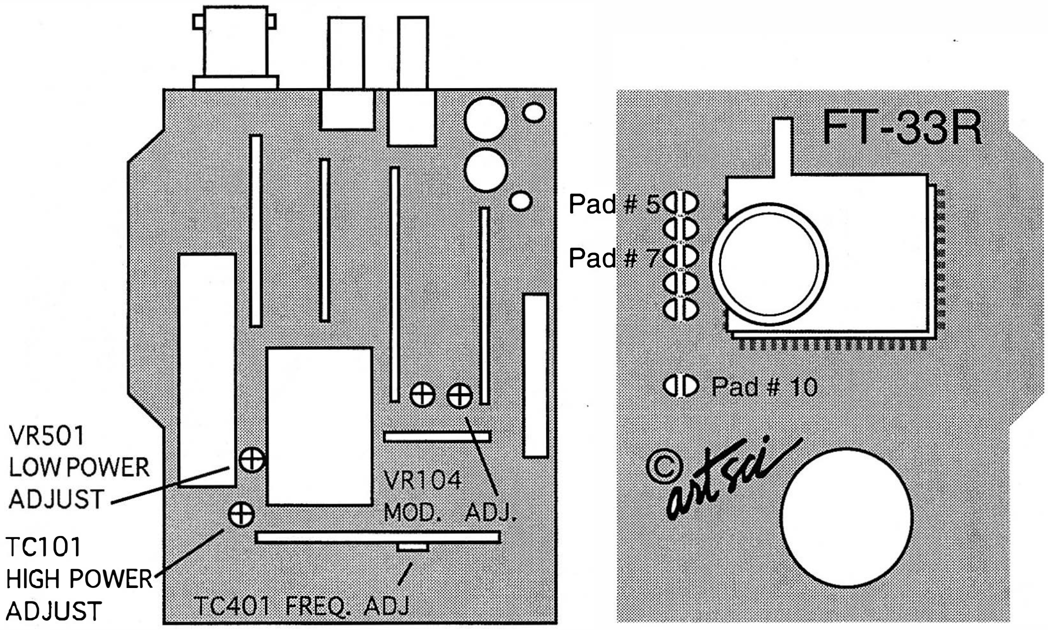
© artsci
(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Expansion Range

The Exact range of this radio is not known as of press time.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Repeater Offset control:

1. PRESS AND HOLD [RPT] & TURN ON THE RADIO.
2. DIAL OFFSET & PRESS [RPT]



Expanded RF Modification

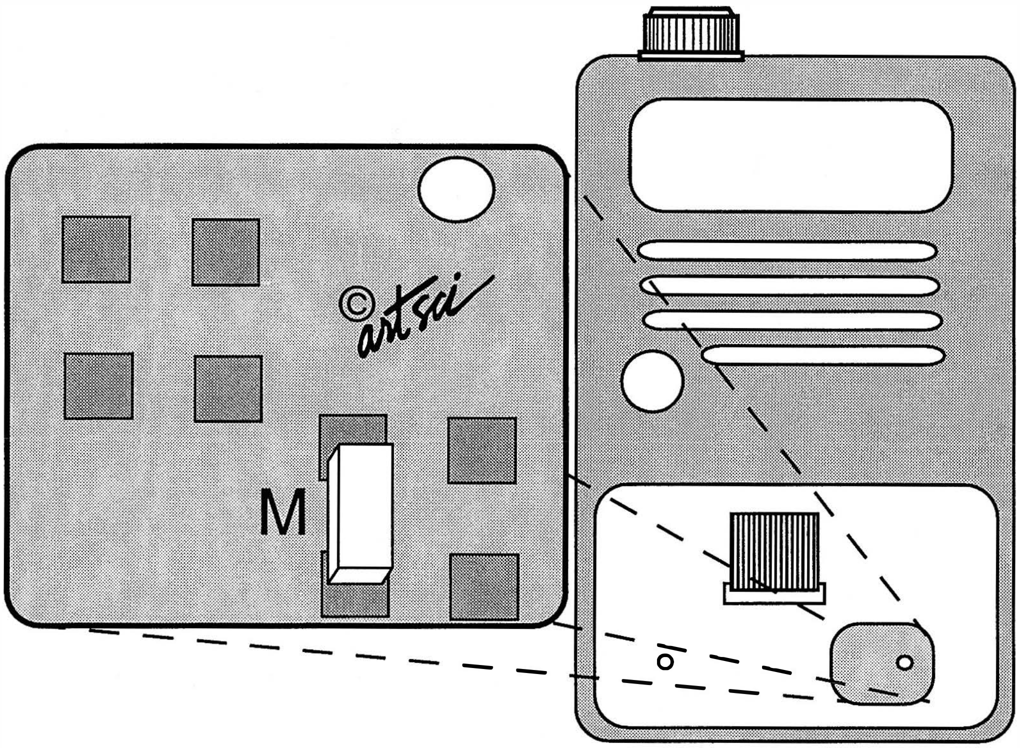
1. Remove Battery and Antenna.
2. Remove control knobs, screws, top panel, battery mounting track & body screws and open Radio
3. For display 220-550 MHz **Pads 7,8 and 9 are open**
   For display 50-300 MHz Pads 8 and 9 are open and 7 is bridged
4. Reassemble radio.

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Transmit Expansion

Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

1. Remove the battery and the antenna.
2. Remove the 2 screws under the "N-Cd" Sticker.
3. Carefully lift the keypad and locae the jumper pads.
4. Locate and **unsolder the 0 ohm resistor at location "M"**
5. Reassemble the radio.
6. Reset the microprocessor.
   (Press and hold (Top-Notch) and [LAMP] button and tum the radio on)

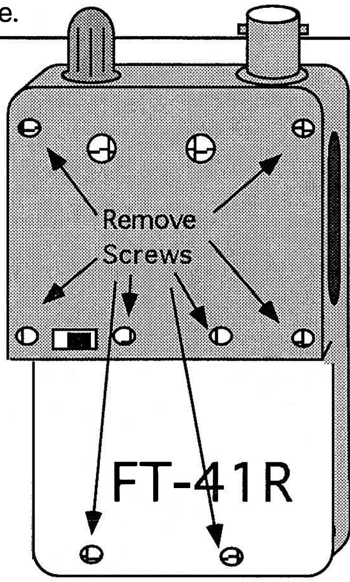
Receive and Transmit Expansion

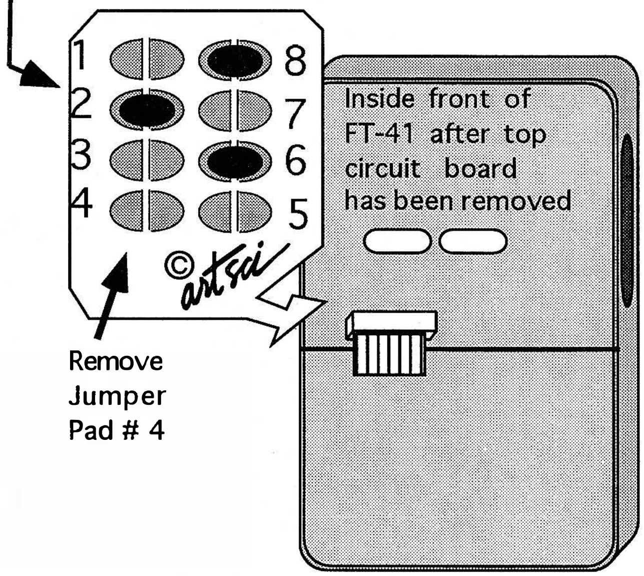
Expansion Range

The Exact range of this radio is not know as of press time. However most radios expand from 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Remove Jumper #2 for Tone Burst.

To activate Tone Burst: Press [Monitor] & [PTT} at the same time.





Expanded RF Modification

1. Remove Battery and Antenna & belt clip.
2. Remove Screws from the back of the radio. See Drawing. (note location of battery release & hand strap clip, they will fall out)
3. Open radio and remove silver battery shield.
4. Remove two silver screws from top circuit board (below speaker/mic connector)
5. Gently pry top and bottom circuit boards apart.
6. Locate and **remove solder from pad #4.**
7. Reassemble the radio. Remember the battery clip and hand strap clips.
8. Reset the microprocessor.
   (Press and hold [UP] & [DOWN] arrow keys and tum the radio on.)
   (Press [MR], [VFO] & [2] and tum the radio on.

Squelch adjustment

Press and hold [CALL], [UP vol] & [DOWN vol] and tum the radio on.
Press [UP MHz] button 3 times. The display will show SQL TI.
Inject a signal or tune to a strong signal (weather channel etc.)
Press [F] Button for 1/2 second this sets the level. ("AD" will blink on display)
Press the [MR] key to set the level
Press [CALL] to store the level in EEPROM memory.

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

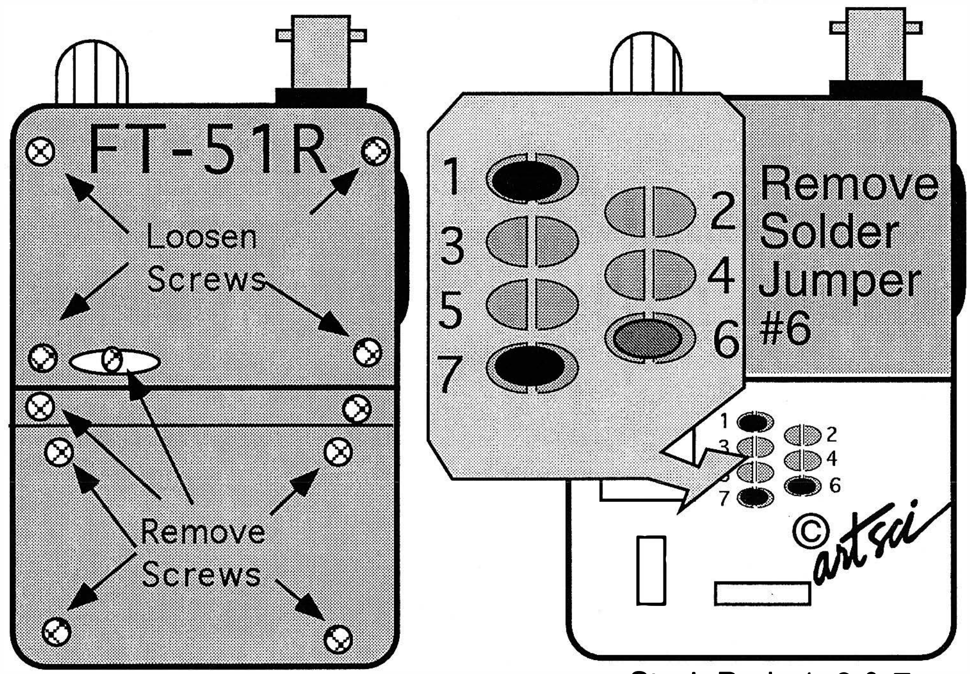
Receive and Transmit Expansion

FT-51R

Expansion Range

140 MHz - 175 MHz
420 MHz - 470 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



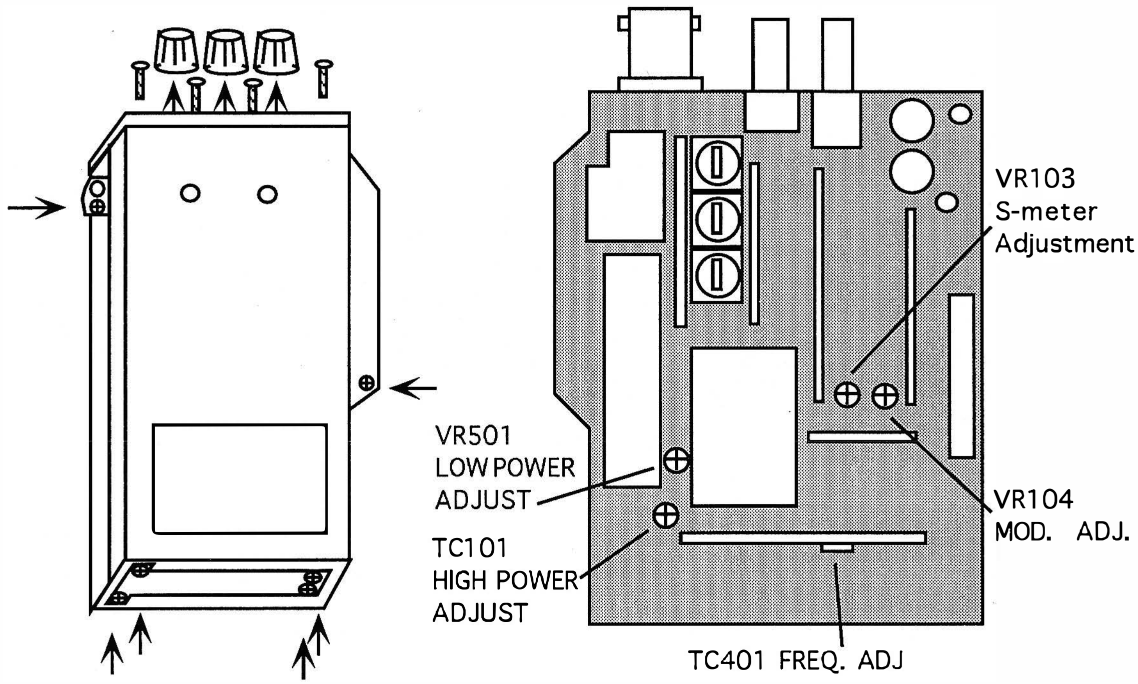
Stock Pads 1, 6 & 7

Expanded RF Modification

1. Remove Battery and Antenna .
2. Remove the six black screws on the rear plastic cover. (See drawing)
3. Remove the one small black screw on the battery slide button.
4. Loosen the four black screws on the upper rear cover and slightly seperate the cover. (DO NOT REMOVE THESE SCREWS)
5. Remove the "L" plastic cover. (USE CAUTION NOT TO DAMAGE THE RIBBON CABLE)
6. Locate and **unsolder jumper pad # 6** (JP1006). (Some models may have a small jumper wire on Pad #6, cut it.)
7. Reassemble the radio.
8. **Reset the microprocessor.** (Press and hold [UP] & [DOWN] and tum on the radio.)

Repeater Offset control:

1. PRESS AND HOLD [RPT] & TURN ON THE RADIO.
2. DIAL OFFSET & PRESS [RPT]



Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove control knobs, screws, top panel, battery mounting track & body screws and open Radio
3. Make adjustments.
4. Reassemble the radio.

YAESU

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Transmit Expansion

Expansion Range

RX: 400 MHz - 485 MHz
TX: 415 MHz - 470 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

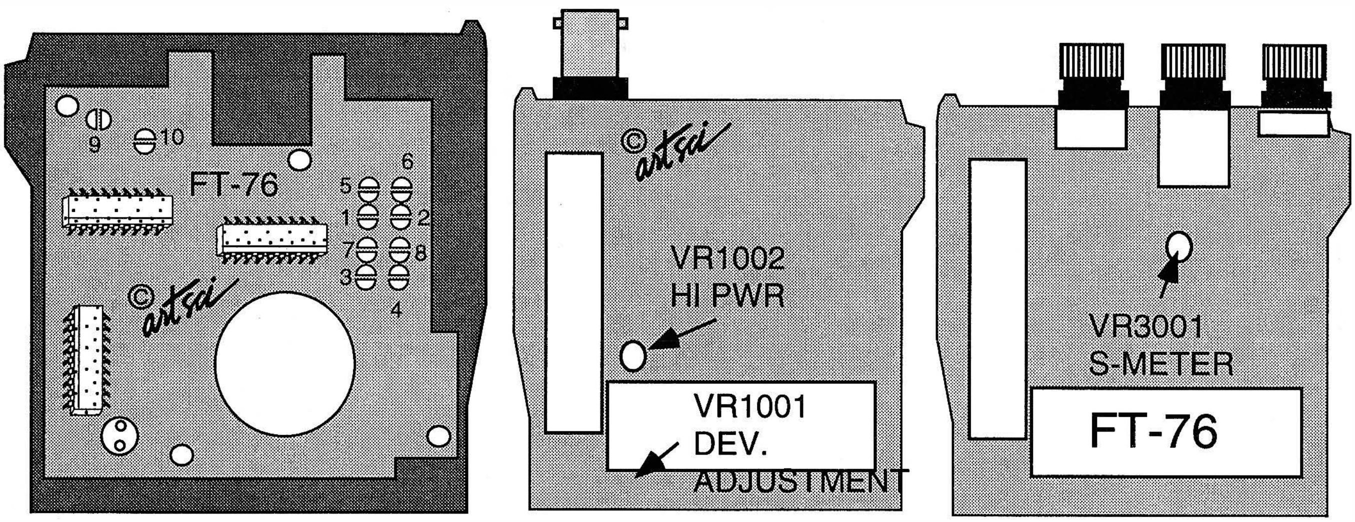
Reset Commands

Soft RESET

Press and hold [T] & [REV] and turn power on.

Master RESET

Press and hold [D/MR] & [T] & [REV] and turn radio on, then enter band Limits below.



Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove the 4 screws holding the battery track.
3. Remove the 2 screws in the back case.
4. Carefully separate the front cover.
5. Locate and **remove solder on Jumper pads 4 and 7.** (on control board)
6. **Solder jump pads 1, 3, 5, 8, 9 and 10** (old mod had pad 4 in place of 5)
7. Reassemble the radio.
8. Turn radio on and each channel indicator will blink.
9. Enter the following frequencies. (use the [F] & up arrow keys)

CH. 1	400.000	Press [D/MR] Lower Rx limit
CH. 2	485.000	Press [D/MR] Upper Rx limit
CH. 3	415.000	Press [D/MR] Lower Tx limit
CH. 4	470.000	Press [D/MR] Upper Tx limit

YAESU

Performance Report

Radio ______________________________ Date ______________

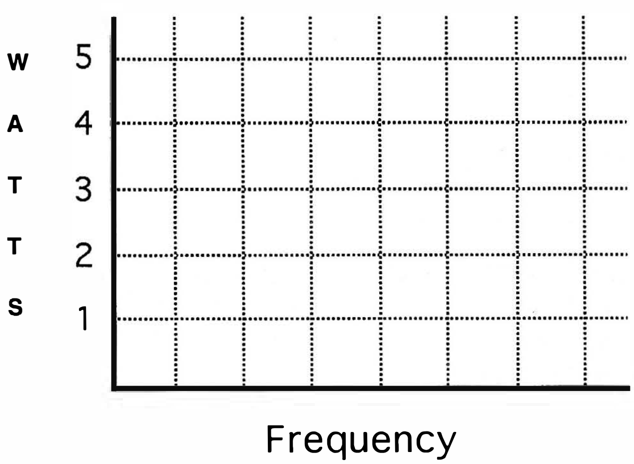
Owner : Name ____

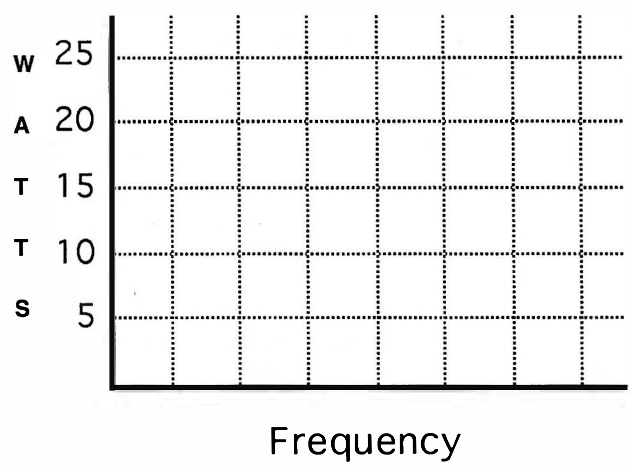
Address ____

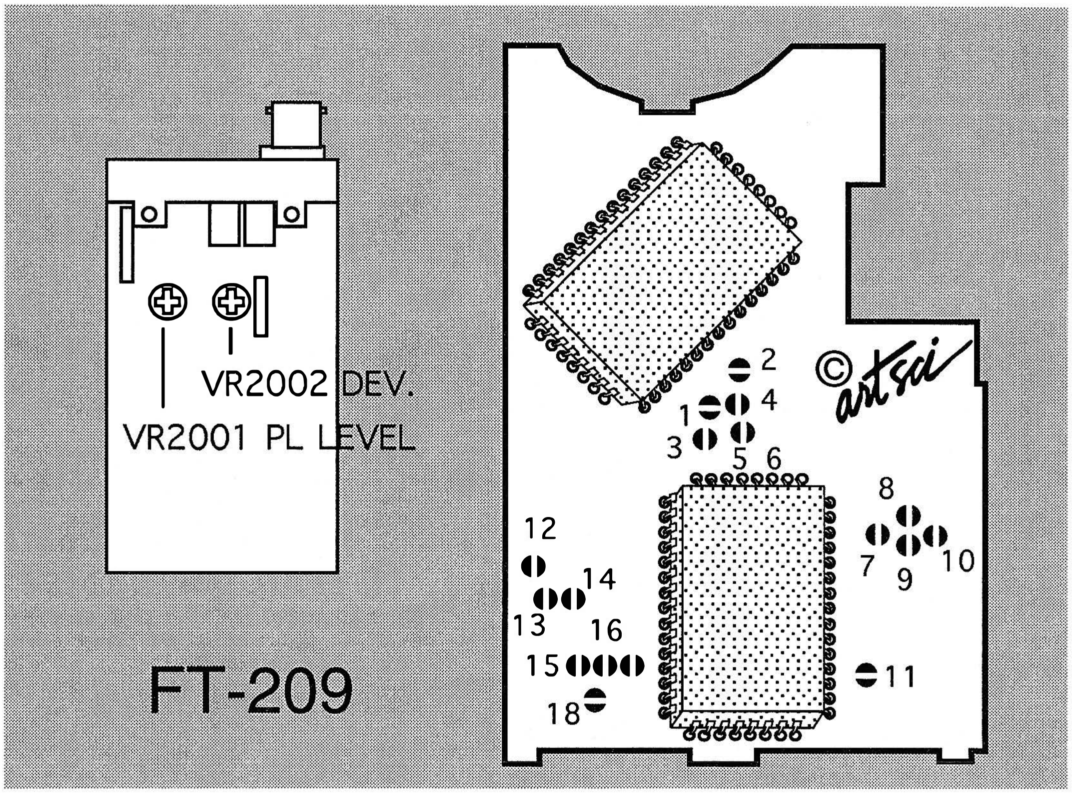
City ______________________ St. Zip ______________

Phone ( ) - ____

Description	Before		After	
Power out (Low)	________	Watts	________	Watts
Power out (High)	________	Watts	________	Watts
Frequency Error (Simplex)	________	Hz	________	Hz
Frequency Error (Offset)	________	Hz	________	Hz
Receive Sensitivity (Mid-band)	________	uv	________	uv
Receive Sensitivity (_____MHz)	________	uv	________	uv
Receive Sensitivity (_____MHz)	________	uv	________	uv
PL Deviation	________	Hz	________	Hz
DTMF Deviation	________	KHz	________	KHz
Audio Deviation	________	KHz	________	KHz
Lowest usable Freq @ .5 Pwr	________	MHz	________	MHz
Highest usable Freq @ .5 Pwr	________	MHz	________	MHz







Expanded RF Modification

1. Remove battery and antenna.
2. Remove battery screws, belt clip screws and side strap screws.
3. Remove black trim on sides of the radio.
4. Remove the two side screws and slide the u-shaped back cover off.
5. Remove the four tiny Phillips screws holding the front panel on.
6. Fold panel to the right to open the radio.

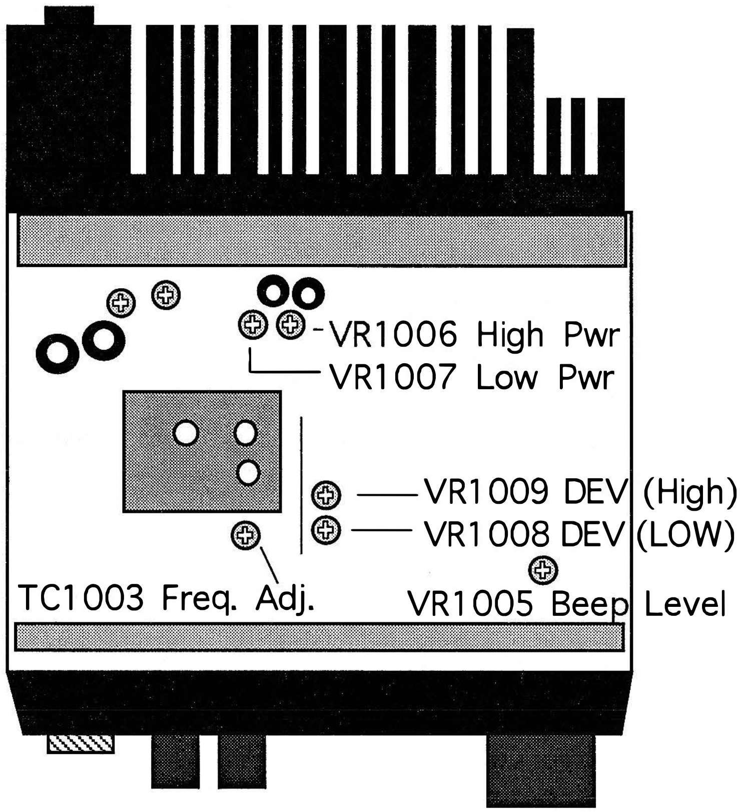
Untested out of band mod #1: **Jumper pads 1,7,9,10 & 13.**
Untested out of band mod #2: **Jumper pads 7,9,10,11& 13.**
Factory default is pads 1,9 & 13.

7. Locate alignment pots. Make adjustments
8. Reassemble the radio.
9. Reset the microprocessor (If desired)
10. Enter 1440 [D], 1480 [D], 1440 [D], 1480 [D], 0600 [SHIFT]
    Note: RX range of 144.0 - 148.0 MHz and TX range of 144.0 - 148.0 MHz

Receive and Transmit Expansion

Expansion Range

The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

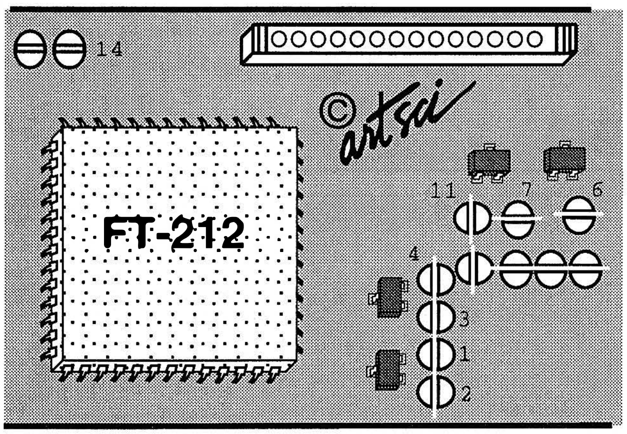
1. Remove five screws from the top cover and remove the cover.
2. Remove five screws from the bottom cover and remove the cover.
3. Unplug the speaker.
4. Remove the four screws holding the front panel.
5. Locate jumper pad number 7.
6. **Solder bridge pad number 7.**
7. Locate the reset pins (Located on the front panel and clearly marked).
8. **Short the reset pins together for one second.**
9. Reassemble the radio.

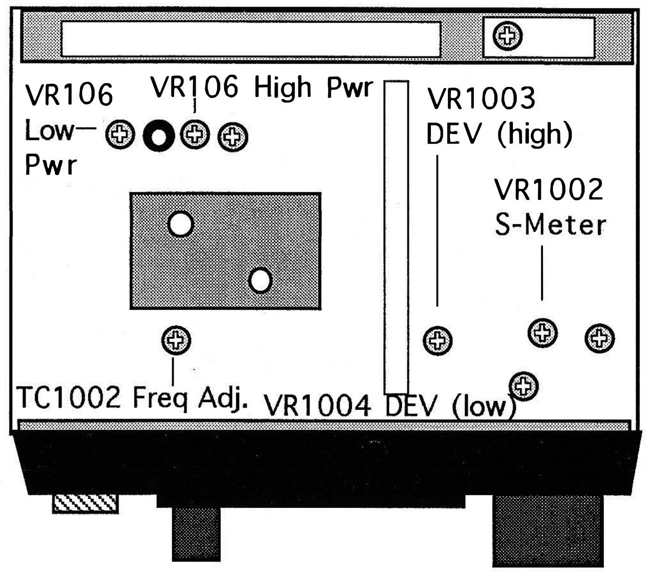
Expansion Range

140 - 164 MHz

Auto Repeater offset is lost.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.





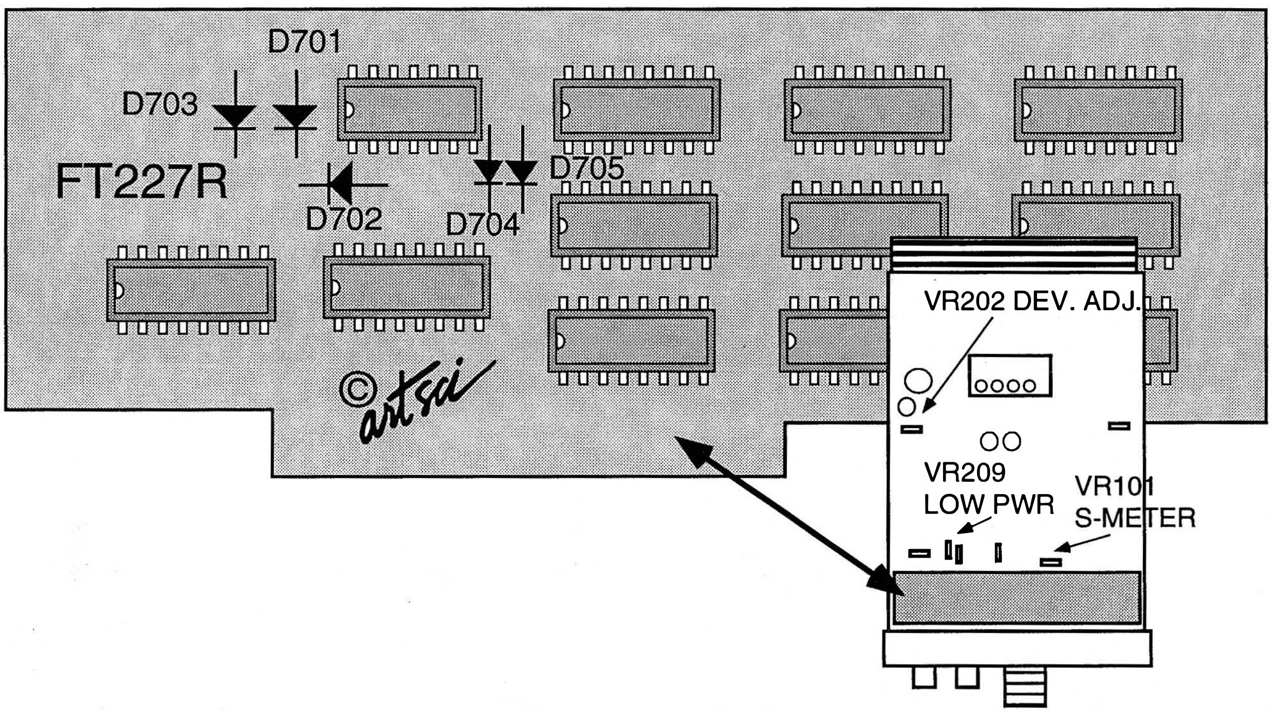
Expanded RF Modification

1. Unplug the DC power cable from the radio.
2. Remove the top and bottom covers.
3. Remove the speaker.
4. Remove the knobs and nuts from the front panel.
5. Remove the three screws from the control unit.
6. Remove the Control unit from the front panel.
7. **Locate & remove solder from pad #1 on control unit.**
8. **Locate & solder jumper Pads 3,4,11 and 14.**
9. Replace the control unit on the front panel.
10. **Reset the microprocessor.** (using a jumper short D09 on the control unit to ground on the radio. Do not apply power).
11. Reassemble the radio. Replace knobs, screws etc.
12. Apply DC power and tum radio on.
13. Press [MHz] & use the control knob to enter 140 and press [D/MR]. (lower limit)
14. Press [MHz] and use knob to enter 174 and press [D/MR]. (upper limit)
15. Press [F] and then [RPT] button. use the control knob to enter 0.600. Press the [RPT] button.

Expansion Range

143.990 MHz - 149.000 MHz
Automatic repeater offset is lost.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



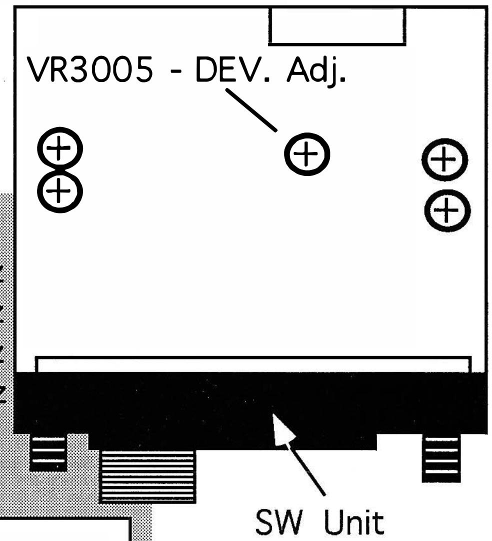
Expanded RF Modification

1. Unplug the power from the radio.
2. Open radio and locate the PLL CONT. UNIT.
3. **Remove D701 and D702.** Do not place in a jumper.
4. **Locate Q712 (MC14028B), and break the connection to Pin 6. (Blue wire)**
5. **Connect pin 1 of Q711 (red wire) to ground.**
6. Reassemble radio

Receive and Transmit Expansion

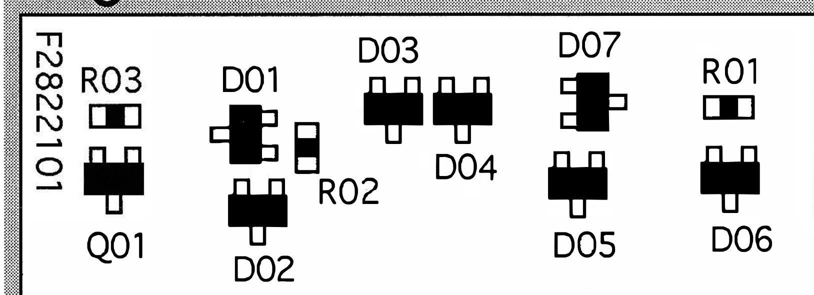
Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



D01	D03	R02	R03	
●	●	○	●	144 - 148 MHz
●	●	○	○	140 - 150 MHz
●	●	●	○	144 - 146 MHz
●	○	●	○	144 - 154 MHz

● Installed
○ Removed



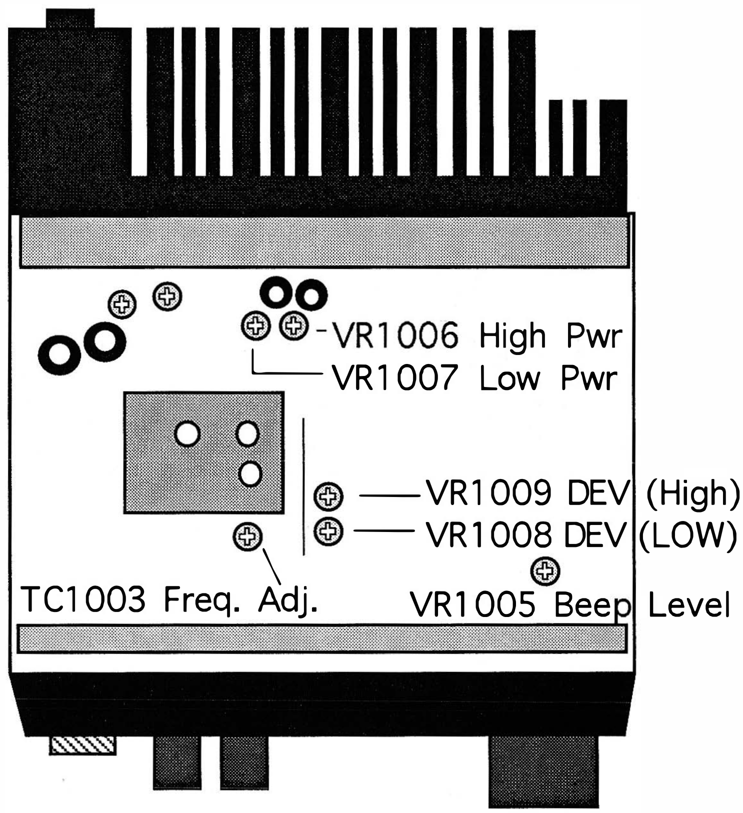
Expanded RF Modification

1. Unplug the power from the radio.
2. Open radio and located SW Unit. The SW unit is located on the front panel, behind the display.
3. Locate components D01, D03, R02 & R03 See drawing.
4. **Remove or Install the components per table 1.**
5. Reassemble the radio.

Expansion Range

The Exact range of this radio is not known as of press time.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

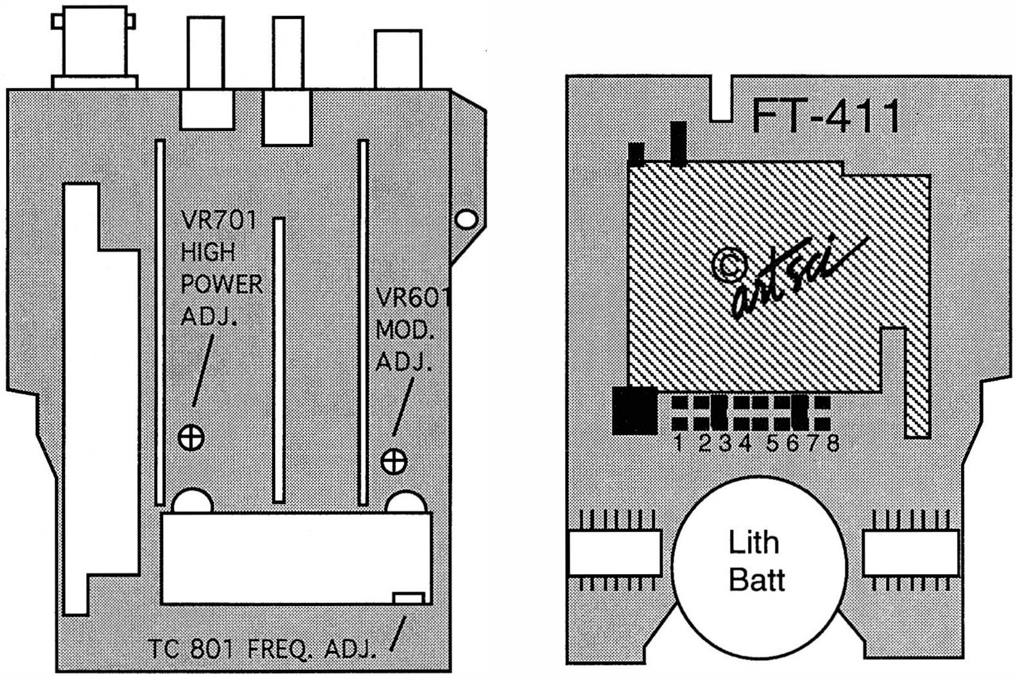
1. Remove five screws from the top cover and remove the cover.
2. Remove five screws from the bottom cover and remove the cover.
3. Unplug the speaker.
4. Remove the four screws holding the front panel.
5. Locate jumper pad number 7.
6. **Solder bridge pad number 7.**
7. Locate the reset pins (Located on the front panel and clearly marked).
8. **Short the reset pins together for one second.**
9. Reassemble the radio.

Expansion Range

RX 120 MHz - 174 MHz
TX 140 MHz - 174 MHz

Disables automatic repeater shift

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

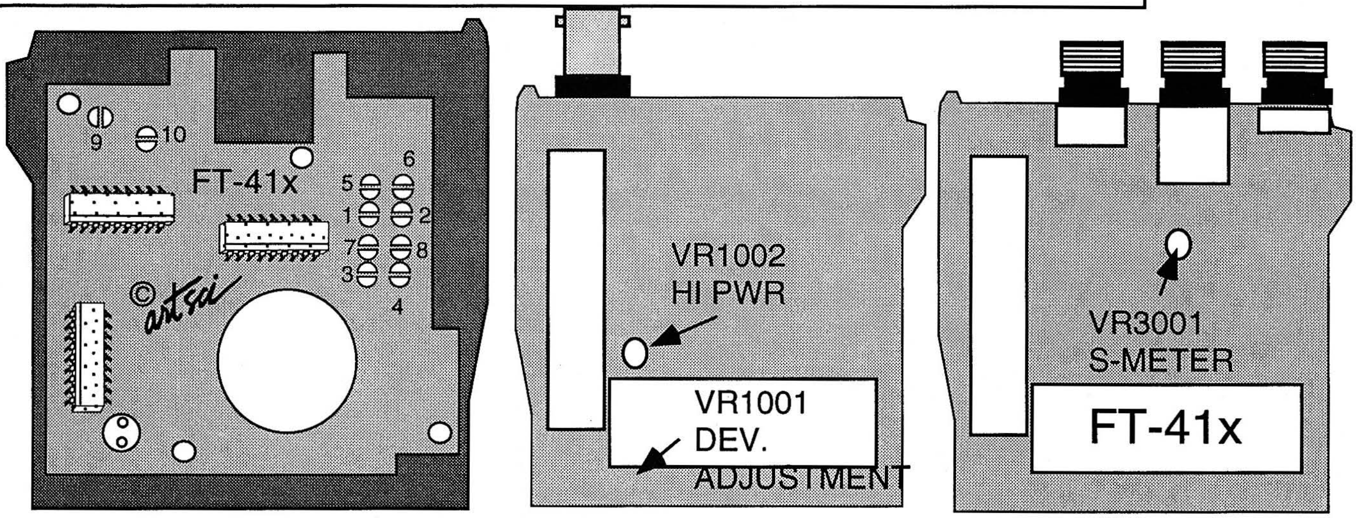
1. Remove Battery and Antenna.
2. Remove control knobs, screws, top panel & body screws and open Radio
3. **Remove solder bridge from Pad # 2**
4. **Place solder Bridge on Pad # 3**
5. Reassemble Radio
6. **Reset Microprocessor.**
   (Press and hold [MR], [2] & [VFO] and turn radio on then off)
   (Press and hold both up and down keys and turn power on)
7. Enter the following: 1200 [VFO] 1740 [VFO] 1400 [VFO] 1740 [VFO]
8. Press [Function] & [7] to change channel step.

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Expansion Range

RX: 120 - 174 MHz
TX: 135 - 174 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove the four screws holding the battery track in place.
3. Remove the two black screws holding the rear case in place.
4. Carefully open the front cover from the radio.
5. Locate and **solder jumper pads 5 & 7.** Pads 3 and 9 are already jumpered.
   (Jumper pads 1 & 10 for 1750 Hz Tone Burst operation)
6. Carefully replace the front cover and replace the two black screws.
7. Replace the battery track and the four screws.
8. **Reset the microprocessor.**
   Press and hold [MR], [2] and [VFO] and turn the radio on.
9. The radio display will cycle orderly through the memory channels.
   Enter the following band limits:
10. Press [F] [7] and select 5 kHz channel spacing in each VFO.

Master Reset Command:
Press and hold [MR] & [2] & [VFO] and turn power on, then enter new limits

Ch. 1 Enter 120.00 and then press [VFO] (Rx low limit)
Ch. 2 Enter 174.00 and then press [VFO] (Rx high limit)
Ch.3 Enter 135.00 and then press [VFO] (Tx low limit)
Ch.4 Enter 174.00 and then press [VFO] (Tx high limit)

YAESU

Performance Report

Radio ______________________________ Date ____________

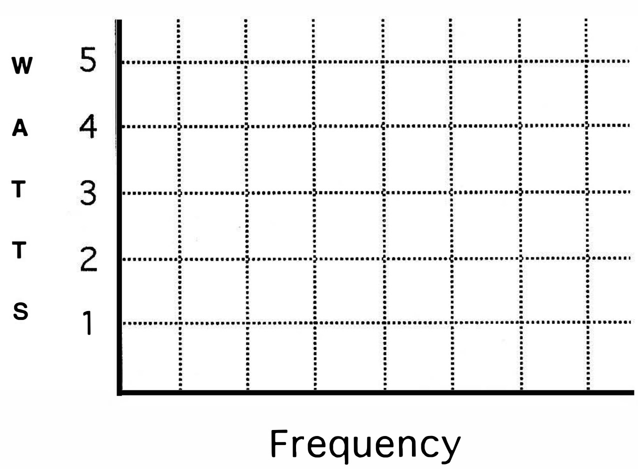
Owner : Name ______________________________________

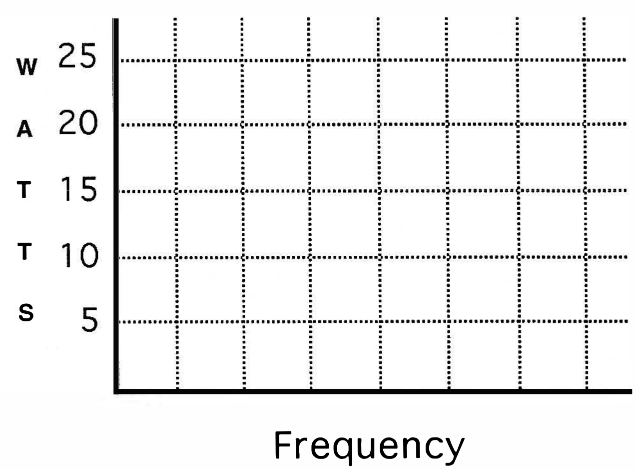
Address ______________________________________

City ____________________ St. ______ Zip ____________

Phone ( ) - ______________________________________

Description	Before	After
Power out (Low)	________ Watts	________ Watts
Power out (High)	________ Watts	________ Watts
Frequency Error (Simplex)	________ Hz	________ Hz
Frequency Error (Offset)	________ Hz	________ Hz
Receive Sensitivity (Mid-band)	________ uv	________ uv
Receive Sensitivity (____MHz)	________ uv	________ uv
Receive Sensitivity (____MHz)	________ uv	________ uv
PL Deviation	________ Hz	________ Hz
DTMF Deviation	________ KHz	________ KHz
Audio Deviation	________ KHz	________ KHz
Lowest usable Freq @ .5 Pwr	________ MHz	________ MHz
Highest usable Freq @ .5 Pwr	________ MHz	________ MHz



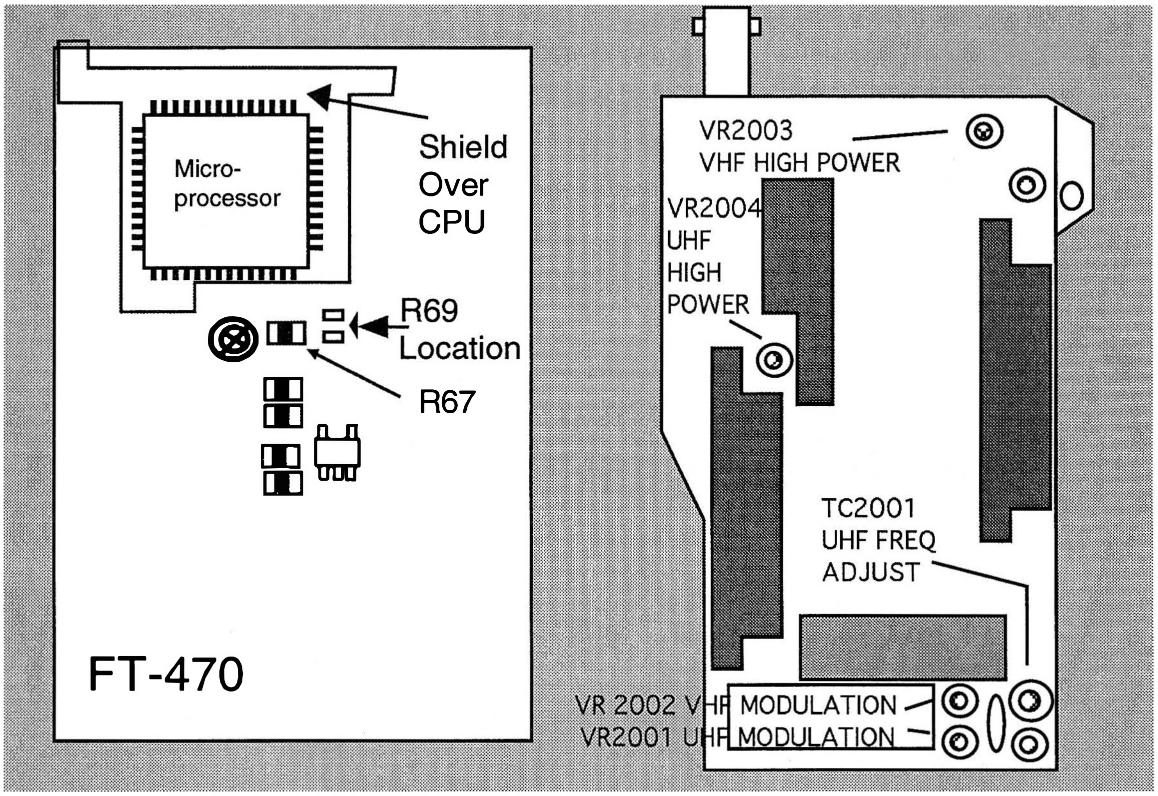


Receive and Transmit Expansion

THERE IS NO MODIFICATION FOR TRANSMIT EXPANSION ABOVE 449.995 MHz

Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 140 Mhz - 174Mhz & 420 - 449 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove control knobs, screws, top panel & body screws and open Radio
3. Carefully unsolder the lithium battery and lift it to expose resistor position .
4. **Solder a Jumper or 0 ohm resistor(or** jumper) in the empty R69 position.
5. OPTIONAL- Crossband Half Duplex mod. Place a jumper wire from pin 4 & 14 of the flat cable wire connecting the front and back panels. This will use the ON AIR signal to mute the AUDIO CNTL line, muting the other band while transmitting.
6. Solder the lithium battery back in place.
7. Reassemble the radio.

More on Next Page

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Hyperscan Mod

Expanded RF (430 - 500 MHz RX)

The following procedure utilizes the "U" memory location to store the upper limit for the UHF reception. A high UHF frequency (ie 470 MHz) must always be stored in the "U" memory for the expanded UHF reception to work.

1. Program 450.00 MHz simplex.
2. Press [F/M] and then [RPT].
3. Enter 0000 into the keypad.
4. Turn the radio off and turn back on.
5. Press [RPT] twice for a + (plus) offset.
6. Press the [REV] button. (The display should now be 1450 MHz)
7. Press [Function] and then [Down Arrow] to drop the frequency down 1 MHz at a time until the display reads 500 MHz.
8. Press and hold the [F/M] key until your hear two beeps.
9. Rotate the dial knob until the "U" memory channel is displayed.
10. Press the [Function] key to store the frequency in memory.
11. Press [Function] and then [Down Arrow] to drop the frequency down 1 MHz at a time until the display reads 450 MHz.
12. Press and hold the [F/M] key until your hear two beeps.
13. Rotate the dial knob until the "L" memory channel is displayed.
14. Press the [Function] key to store the frequency in memory.

***** Stop here for 440 - 470 Coverage.**

15. Turn radio off and on and select the "U" memory channel.
16. Press [MR] and then [RPT]
17. Press the PTT button 3 times. The display should read 070.00 MHz
18. Press [Function] and then [Up Arrow] to increase the frequency up 1 MHz at a time until the display reads 400 MHz.
19. Press and hold the [Function] key until your hear two beeps.
20. Rotate the dial knob until the "L" memory channel is displayed.
21. Press the [Function] key to store the frequency in memory.

To receive a desired UHF frequency, you must use the following steps:

1. Select the "U" memory channel.
2. Press the [MR] key to enter the "MEMORY TUNE" mode.
3. Use the [arrow] keys or Dial Knob to select the desired frequency.
4. Store the selected in any memory channel, except memory channel "U" & L

Hyperscan Modification:

1. Select the "ALT mode by pressing [F] and [ALT]
2. Press the [UP] or [DOWN] arrow.
3. When the scan stops, Press [F] and then [VFO].
4. Press the [UP] or [DOWN] arrow. (HYPERSCAN MODE)
5. Press [F] and [ALT] to stop scan mode.

Receive and Transmit Expansion

YAESU
FT-530
Early Model

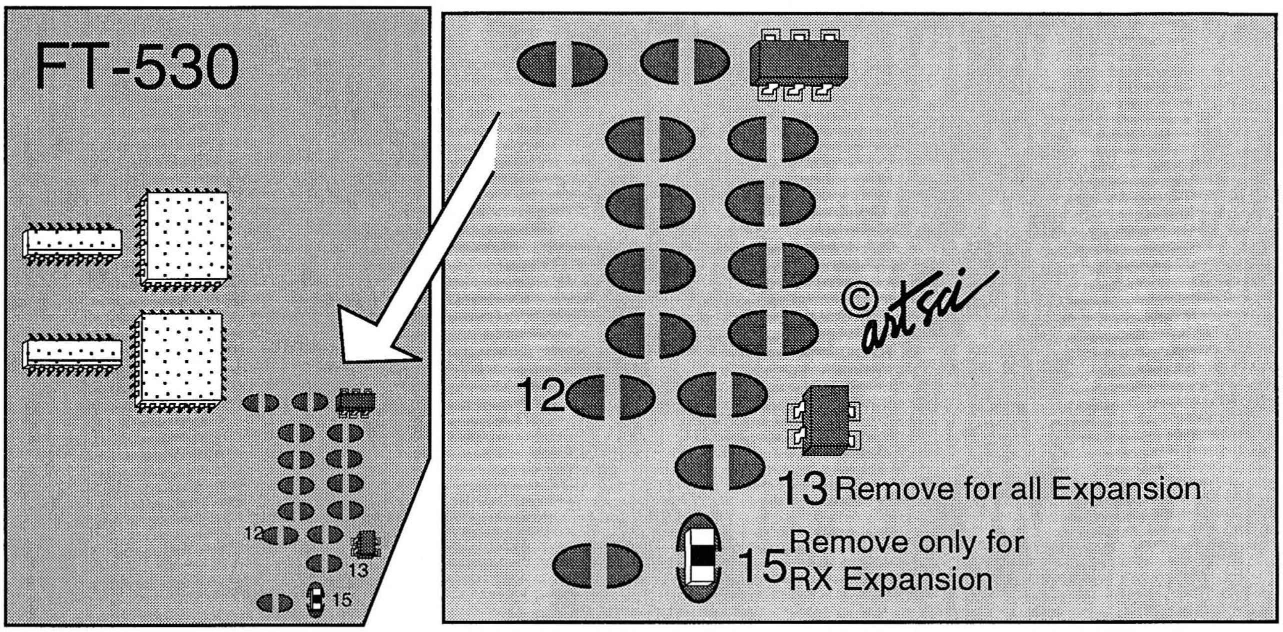
Expansion Range

RX: 110-180 MHz, 300-500 MHz
TX: 130-177 MHz, 400-470 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

TONE BURST -
Jumper Pad # 12.
Stock Pads Soldered: 1, 3, 6, 8, 11, 13, 15

RX ABOVE 500 MHz:
Put 300 in lower limit & 950 in upper limit.
Press [MR] [MR]. (a line will appear on the display below "L")
Enter in desired FREQ.



Expanded RF Modification

1. Remove battery and antenna.
2. Locate and remove the 4 screws on the bottom battery track.
3. Locate and remove the 4 black screws on the rear case.
4. Carefully open the front cover and open the radio.
5. Note location of white paper insulator and remove it. (Don't throw away)
6. **Locate jumpers location J13 and remove solder jumper.**
   DO NOT DO BOTH JUMPER pads 13 & 15.
7. Replace the paper insulator making sure the ground tabs slide through insulator
8. Close radio being careful not to pinch any wires.
9. Replace all screws.
10. Replace battery and antenna.
11. Press and hold both [MR] & [VFO] arrow buttons and turn power on..

YAESU

Receive and Transmit Expansion

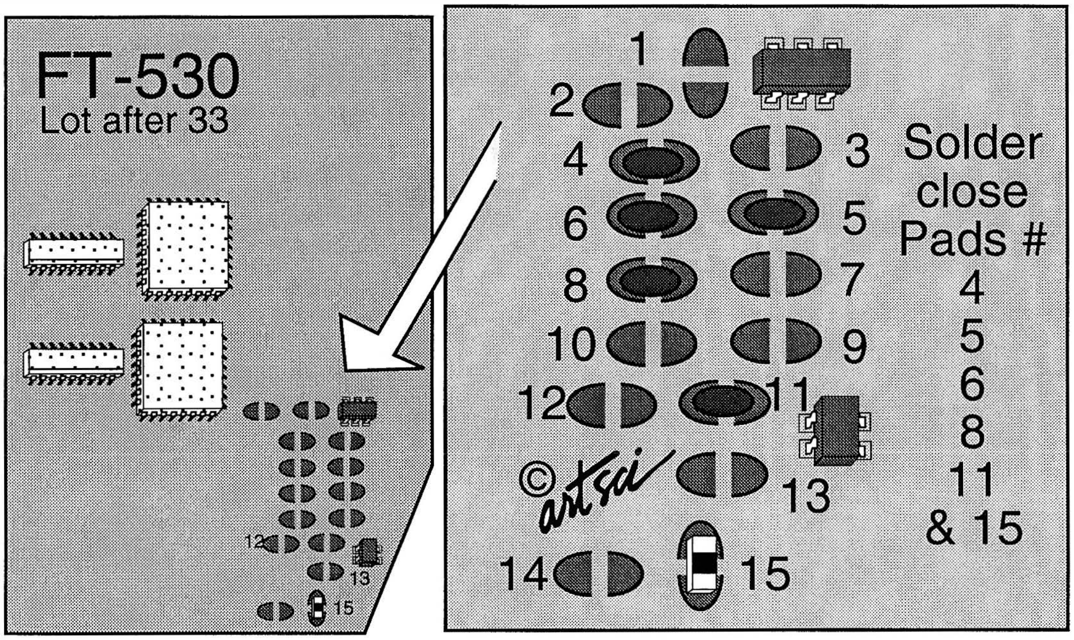
FT-530

After Lot 33

Expansion Range

RX: 110-177 MHz, 300-500 MHz
TX: 130-177 MHz, 400-470 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Original Jumpers (O - Open, C- Closed)

1	- C
2	- O
3	- C
4	- O
5	- O
6	- C
7	- O
8	- C
9	- O
10	- O
11	- C
12	- O
13	- C
14	- O
15	- C

Expanded RF Modification

1. Remove battery and antenna.
2. Locate and remove the 4 screws on the bottom battery track.
3. Locate and remove the 4 black screws on the rear case.
4. Carefully open the front cover and open the radio.
5. Note location of white paper insulator and remove it. (Don't throw away)
6. **Locate jumpers and remove solder jumpers #1, 3 & 13(green wire).**
7. **Solder Jump Pads #4 & 5.**
   (Pads #4, 5, 6,8,11 & 15 are now solded.
8. Replace the paper insulator making sure the ground tabs slide through insulator
9. Close radio being careful not to pinch any wires.
10. Replace all screws.
11. Replace battery and antenna.
12. **Press and hold both [MR] & [VFO] arrow buttons and turn power on.**

Notes

Expansion Range

24- 56 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

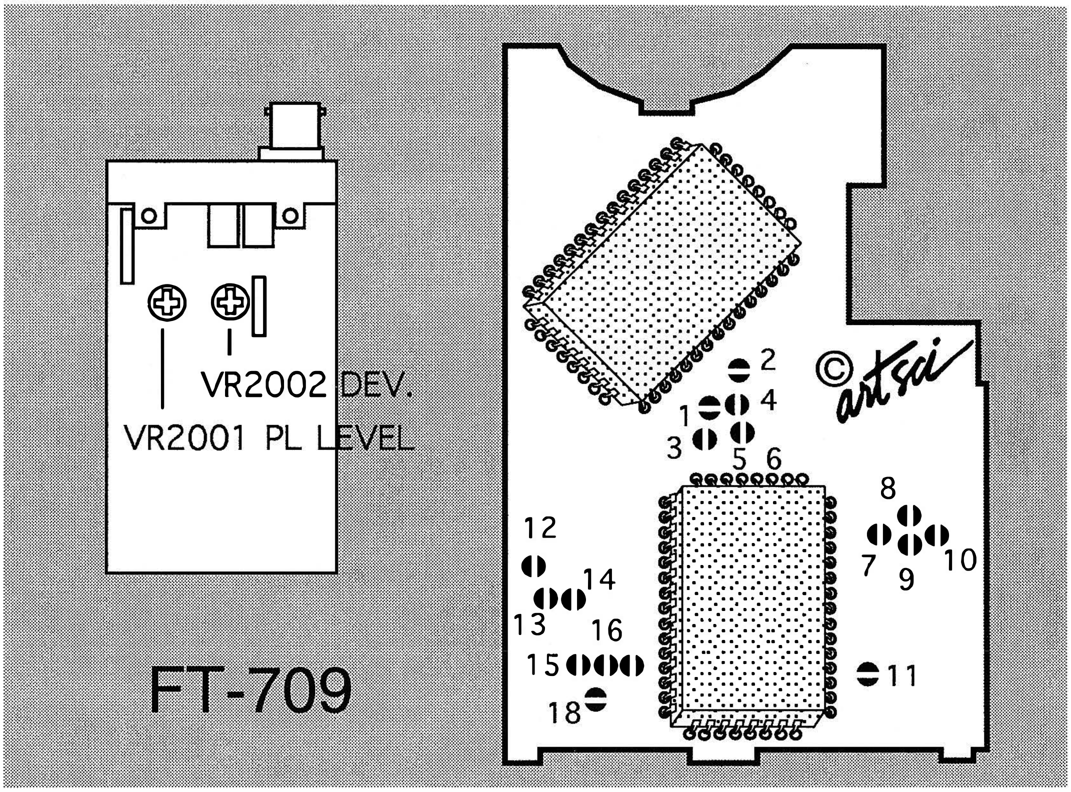
Expanded RF Modification

1. Turn the radio off.
2. Press and hold [VFO] & [MR] and turn on the radio.

Repeat the step above to return to Normal settings

Expansion Range

The Exact range of this radio is not known as of press time.



Expanded RF Modification

1. Remove battery and antenna.
2. Remove battery screws, belt clip screws and side strap screws.
3. Remove black trim on sides of the radio.
4. Remove the two side screws and slide the u-shaped back cover off.
5. Remove the four tiny Phillips screws holding the front panel on.
6. The ground jumper on the left side needs to be unsoldered.
7. Fold panel to the right to open the radio

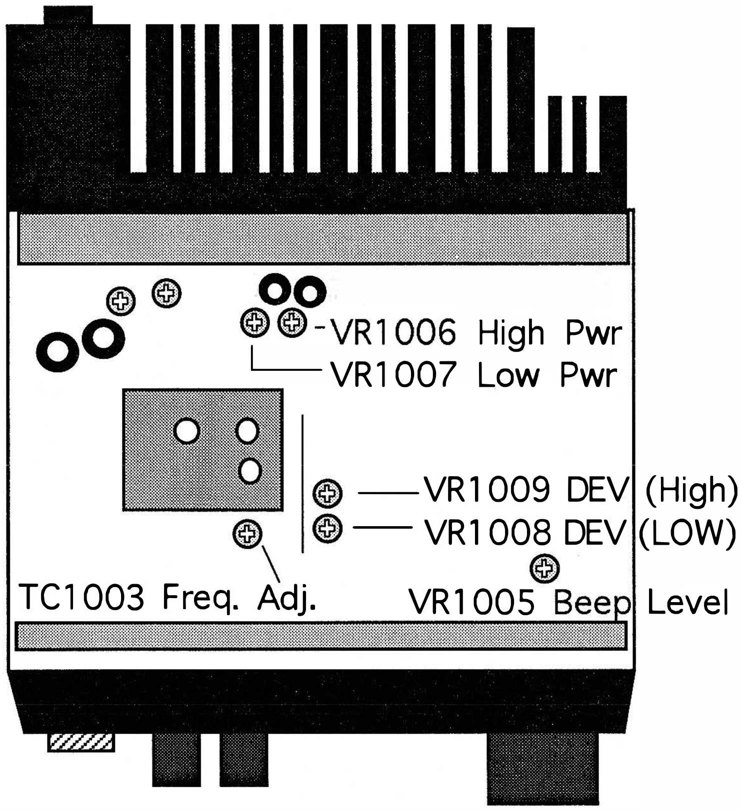
Untested out of band mod #1: **Jumper pads 1,7,9,10, 13 & 16.**
Untested out of band mod #2: **Jumper pads 7,9,10,1, 13 & 16.**

8. Locate alignment pots. Make adjustments.
9. Reassemble the radio.
10. Reset the microprocessor. (If desired)
11. On FT-709 enter 4400 [D], 4490 [D], 4400 [D], 4490 [D]. 5000 [SHIFT]
    Note: RX range of 440.0 - 449.0 MHz and TX range of 440.0 - 449.0 MHz

Receive and Transmit Expansion

Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

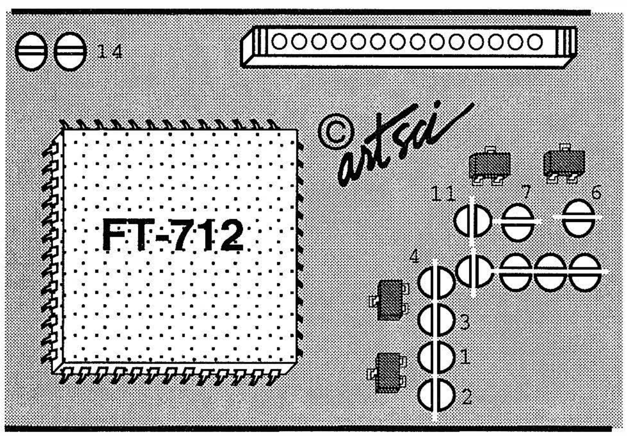
1. Remove five screws from the top cover and remove the cover.
2. Remove five screws from the bottom cover and remove the cover.
3. Unplug the speaker.
4. Remove the four screws holding the front panel.
5. Locate jumper pad number 7.
6. **Solder bridge pad number 7.**
7. Locate the reset pins (Located on the front panel and clearly marked).
8. Short the reset pins together for one second.
9. Reassemble the radio.

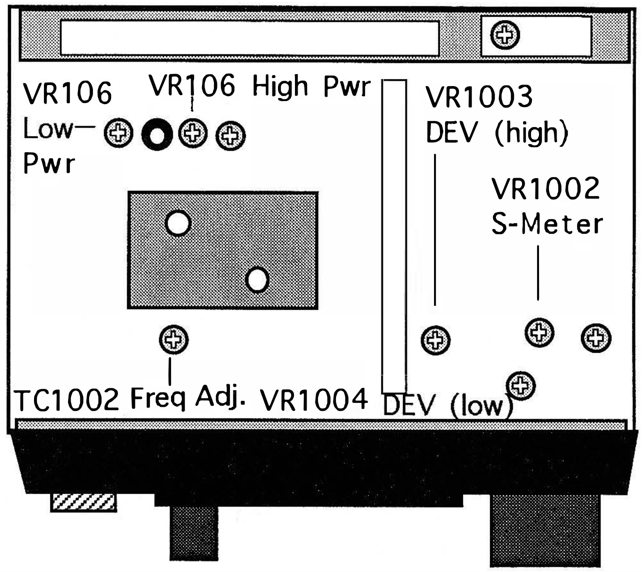
(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Expansion Range

430 MHz - 465 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.





Expanded RF Modification

1. Unplug the DC power cable from the radio.
2. Remove the top and bottom covers.
3. Remove the speaker.
4. Remove the knobs and nuts from the front panel.
5. Remove the three screws from the control unit.
6. Remove the Control unit from the front panel.
7. **Remove solder from pad #1 and Pad #2 on control unit.**
8. **Solder jumper Pads 4 and 14.** Pads 3,4,5,7,11 and 14 will be bridged
9. Replace the control unit on the front panel.
10. **Reset the microprocessor.** (using a jumper short D09 on the control unit to ground on the radio. Do not apply power).
11. Apply DC power and turn radio on.
12. Press [MR] & use the control knob to enter 430 and press [D/MR]. (lower limit)
13. Press [MR] and use knob to enter 501 and press [D/MR]. (upper limit)
14. Press [F] and then [RPT] button. use the control knob to enter 5.000. Press the [RPT] button.

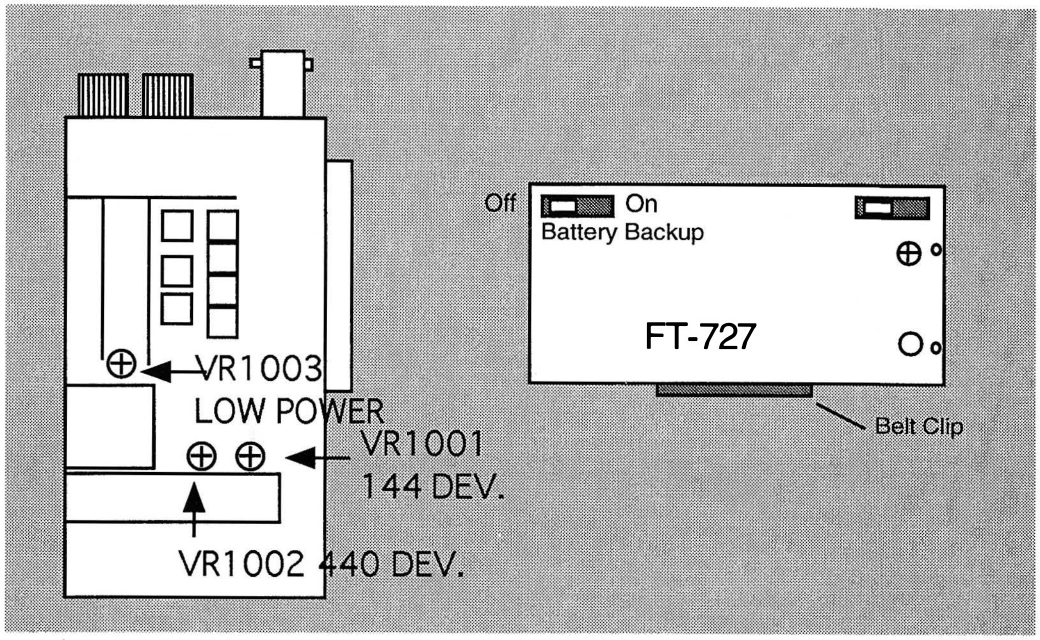
YAESU

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Transmit Expansion

Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

1. Remove Battery
2. Tum off the Battery backup switch. (located on the bottom of the radio)
3. Wait 10 Seconds and Turn the switch back on
4. Replace battery
5. Tum Radio ON. (Display should go blank, if not redo steps 1-4)
6. Enter the following: 001111 (note: factory setting is 443300)
7. Reset the VHF & UHF offsets.
   Select VHF then Press [F] then the [Shift] button.
   Enter 0600 then [D]
   Select UHF then Press [F] then the [Shift] button.
   Enter 5000 then [D]

PLL Alignment

1. Remove battery, and belt clip
2. Remove battery track screws
3. Remove rear cover
4. Install the battery track.
5. Turn radio on & enter desired frequency
6. Adjust L01 (black slug) in VCO unit until the on air lamp is lit (red light) (L01 core, turn counter-clock wise)
7. Reassemble the radio.

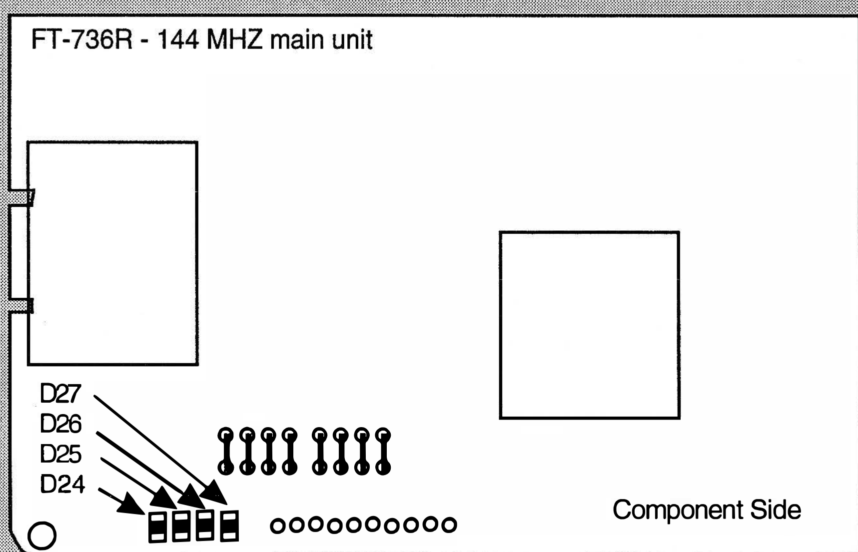
Expanded RF Modification

1. Unplug the power from the radio.
2. Open the radio and locate the 144 MHz main unit.
3. Locate diodes D24, D25, D26 and D27 See drawing.
4. **Remove or Install the diodes per table 1.**
5. Reassemble radio.

D24	D25	D26	D27	
○	●	●	○	144.0 - 148.0 MHz
○	●	●	●	141.0 - 154.0 MHz
○	○	●	●	144.0 - 146.0 MHz

● Installed
○ Removed

© artsci



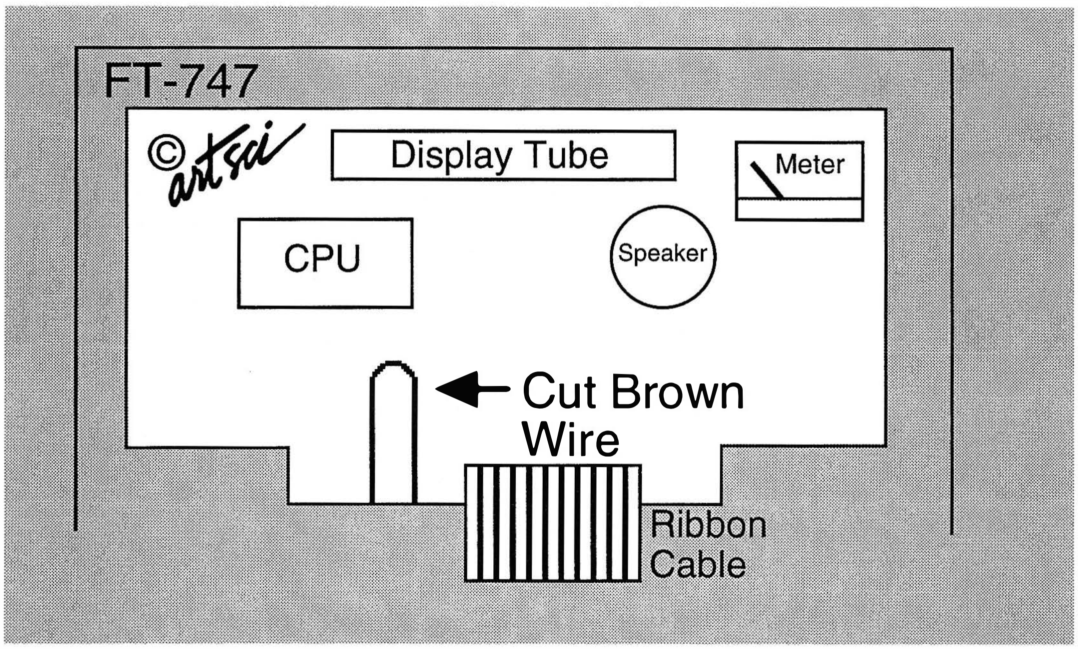
(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Transmit Expansion

Expansion Range

.5 MHz - 30 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

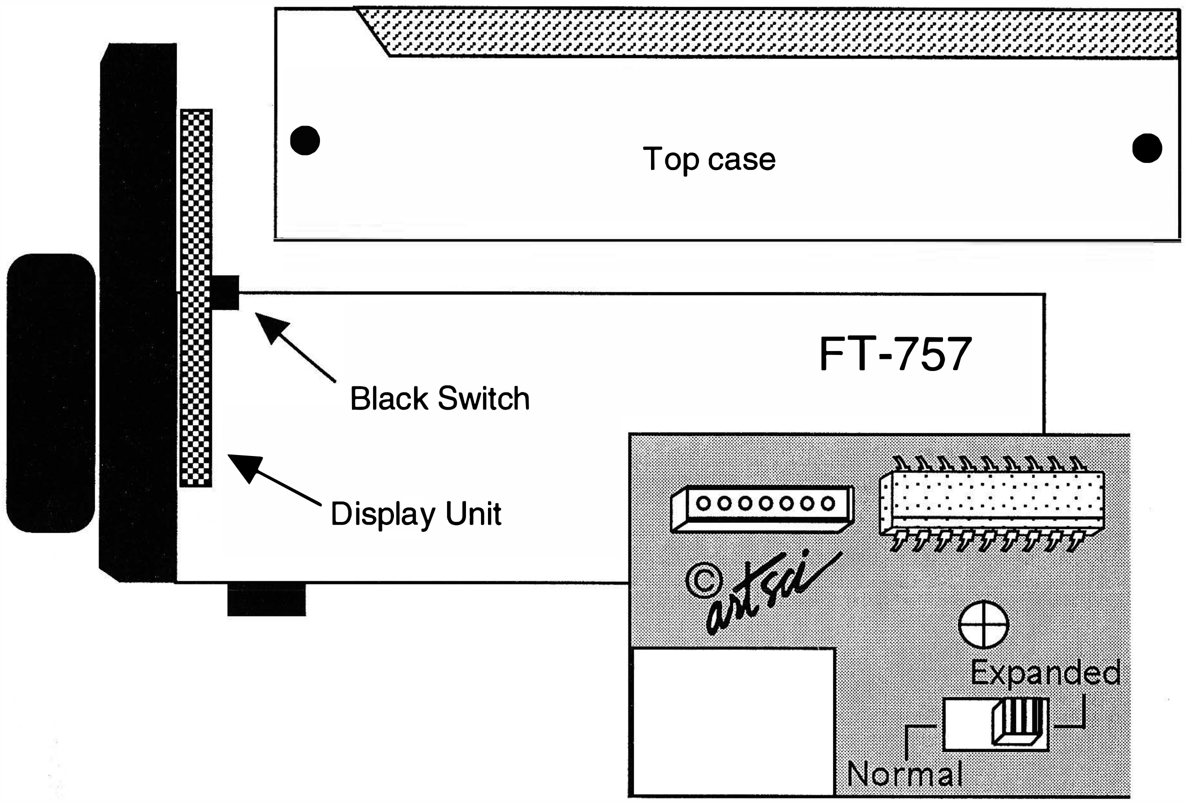
1. Unplug the DC power cable from the radio
2. Remove the top cover (see instruction manual page 23)
3. **Remove or cut the BROWN jumper wire** on the display unit. See Drawing
4. Reconnect the power cable and turn the radio on
5. Set the VFO dial to 12.3456 MHz
6. Turn power off and then back on again.
7. Turn power off and reassemble radio. (don't pinch any wires)

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Transmit Expansion

Expansion Range

The Exact range of this radio is not know as of press time. Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

1. Unplug the DC power cable from the radio.
2. Remove the top cover. You may need to remove the speaker wire to remove the top cover. (see service manual for cover removal)
3. Locate the Black slide switch on the display panel. (to the right of center and halfway down the backside.
4. Use a screwdriver to **set the switch to the left most position.**
5. Reassemble the radio.

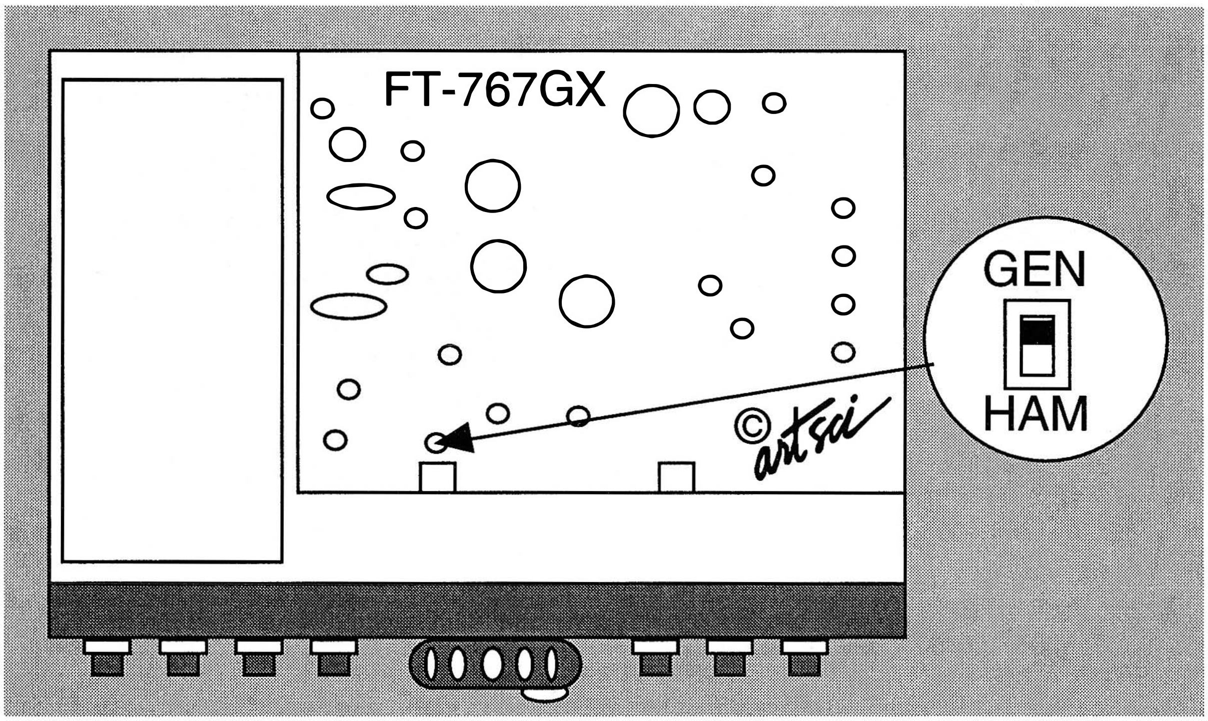
Some models outside the USA may need the following modification -

1. Isolate pin 19 of IC-67(MC68HC05C) on both side of circuit board.
2. Link pin 19 to pin 16 of IC-66(MC14510) with a 10 resistor. Be sure to use resistor leads are insulated to prevent shorts.

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Expansion Range

The Exact range of this radio is not know as of press time.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

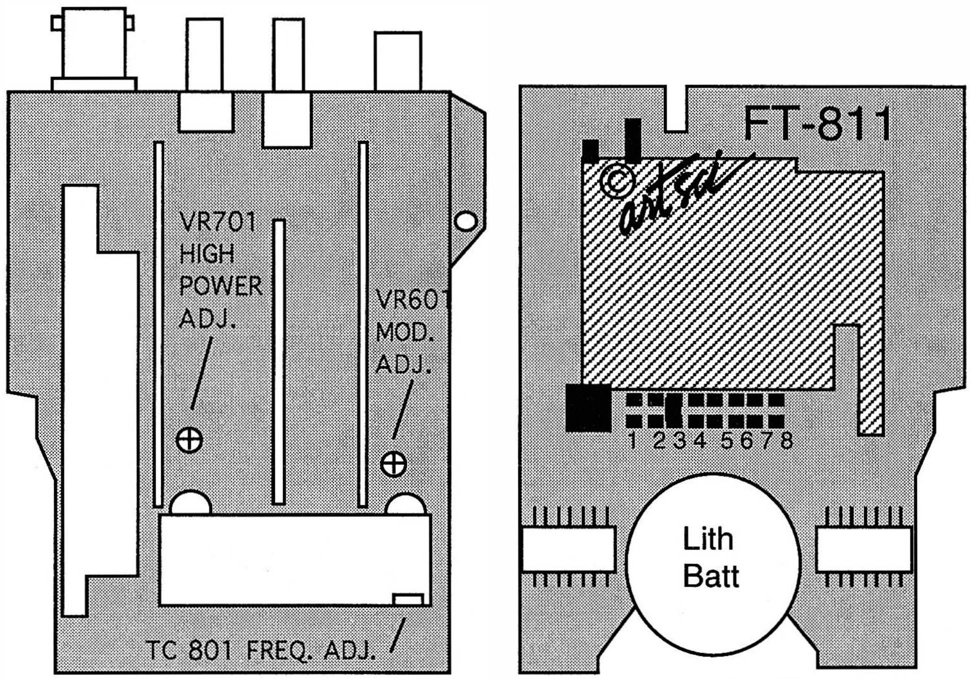
1. Unplug the DC power cable from the radio.
2. Remove any VHF or UHF Band modules.
3. Remove two screws at the front of the top cover and remove the top cover .
4. Locate the GEN/HAM switch inside the shield cover.
5. **Use a screwdriver to set the switch to the GEN position.**
6. Reassemble the radio.

Expansion Range

RX 410 MHz - 475 MHz
TX 410 MHz - 475 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

(disables automatic repeater shift)
For Serial # 9D, 9F and 9J series only.
Serial Numbers above 9N can not be modified



Pads 2 & 4 OPEN
Pad 3 Closed(soldered)

Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove control knobs, screws, top panel & body screws and open Radio
3. **Remove solder bridge from Pad # 2**
4. **Remove solder bridge from Pad # 4**
4. **Place solder Bridge on Pad # 3**
5. Reassemble the radio
6. **Reset microprocessor.** (Press and hold [MR] & [VFO] and turn radio on then off) (Press and hold both up and down keys and turn power on)
7. Enter the following: 4100 [VFO] 4750 [VFO] 4100 [VFO] 4750 [VFO]
8. Press [Function] & [7] to change channel step.
9. Press [F] & [RPT] and enter offset in both VFO. (5.00 MHz is standard)

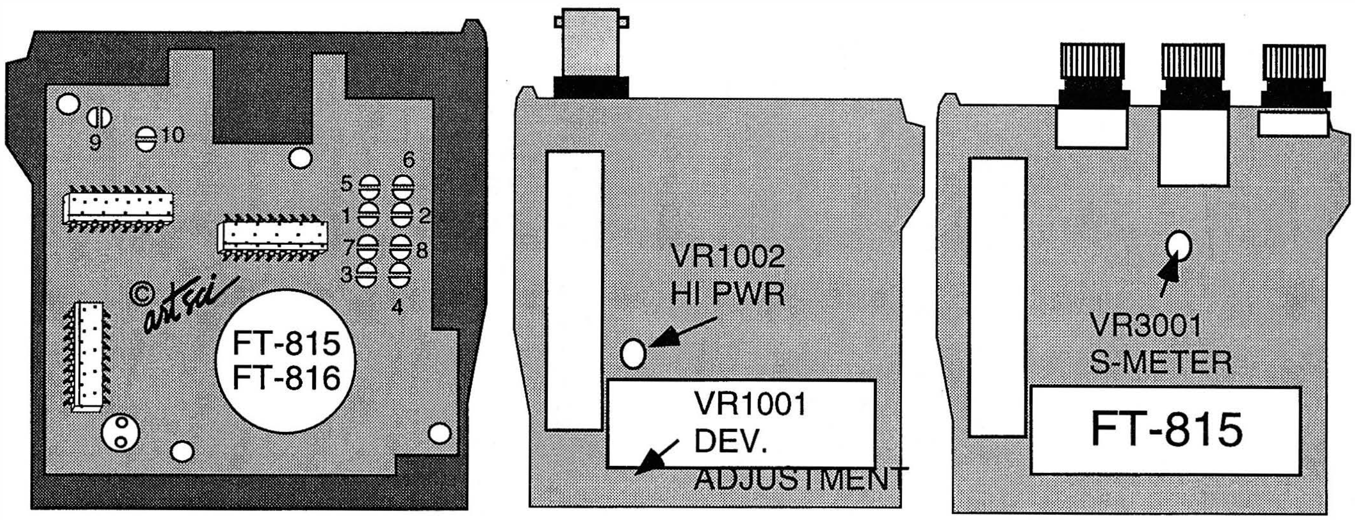
YAESU

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Transmit Expansion

Expansion Range

410 - 475 MHz RX
415 - 470 MHz TX
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove the four screws holding the battery track in place.
3. Remove the two black screws holding the rear case in place.
4. Carefully open the front cover from the radio.
5. Locate and **remove the solder from jumper pad #8.**
6. **Locate and solder jumper pads 5 & 7.** Pad 9 is already jumpered.
7. Carefully replace the front cover and replace the two black screws.
8. Replace the battery track and the four screws.
9. Reset the microprocessor.
10. **Press and hold [MR], [2] and [VFO] and turn the radio on.**
11. The radio display will cycle orderly through the memory channels.
    Enter the following band limits:

Ch. 1	Enter 410.00 and then press [VFO]	(Rx low limit)
Ch. 2	Enter 475.00 and then press [VFO]	(Rx high limit)
Ch. 3	Enter 415.00 and then press [VFO]	(Tx low limit)
Ch. 4	Enter 470.00 and then press [VFO]	(Tx high limit)

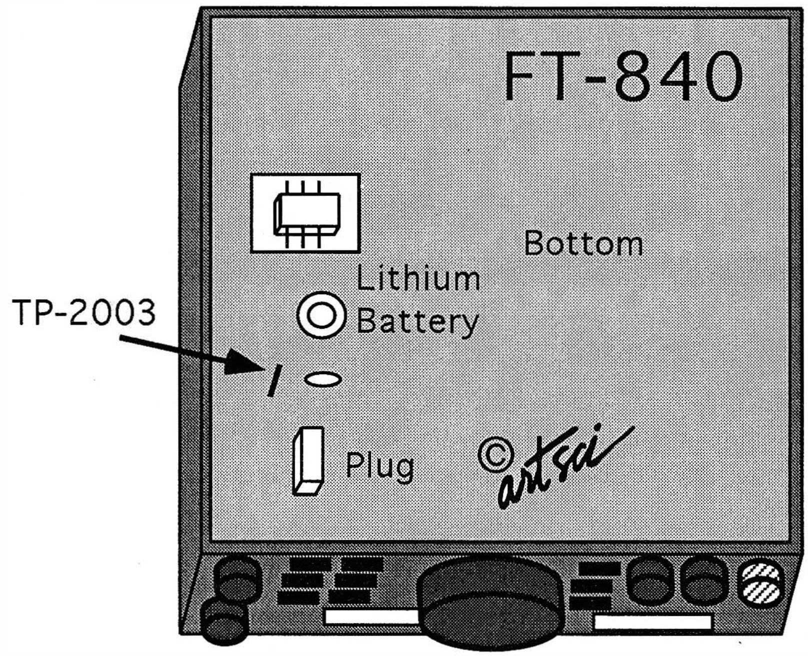
16. Press [F] [0] & [6] and select 5.000 MHz channel spacing in each VFO.

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Expansion Range

1.8 MHz - 30 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

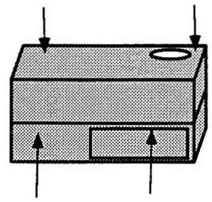
1. Remove antenna from the radio.
2. Remove top and bottom covers.
3. On Local Unit, **TEMPORARILY jump TP-2003 to ground**.
   (Take a wire clip lead and attach it to the metal case)
4. Press and Hold [SSB] & [AM] & tum power on. (display will show 02-OFF)
5. Rotate main control knob to show 02-ON.
6. Press [AM]. The display should show (7.000.00 LSB)
7. Tum the radio off.
8. Press and hold the memory [DOWN] & [UP] buttons and tum the radio on.
9. Tum the radio off.
10. Remove the Jumper to ground on TP-2003
11. Reassemble the radio.

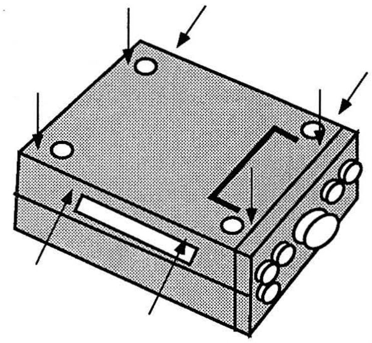
(818) 843-4080 12-4 PST, Fax:(818) 846-2298

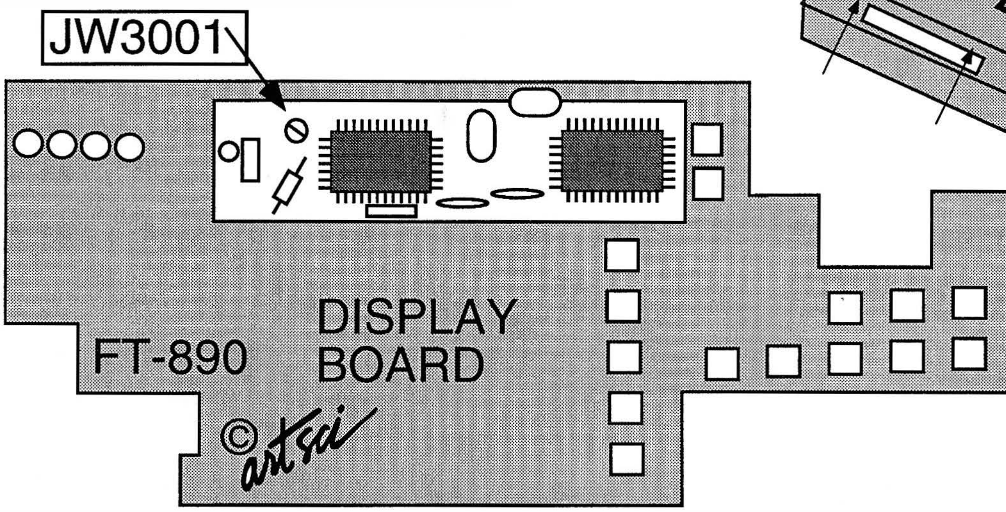
Expansion Range

1.8 MHz - 29.99Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.







Expanded RF Modification

1. Remove power from the radio.
2. Remove covers.

The next step is done TEMPORARILY.

3. **Locate jumper location JW3001 on the DISPLAY UNIT and solder bridge the pads.**
4. Reconnect the power cable.
5. **Press and hold [PROC], [AGC-F], [IPO] & [ATT] and turn the power on.**
6. **Rotate the main dial until the display shows 02-ON .**
7. **Press [PROC].** This will confirm and write the data to EEPROM memory.
8. Tum the power off and remove the power cords.
9. Remove the jumper placed in step 3 above.
10. Replace the covers.

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Expansion Range

1.8 MHz - 29.99 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Expanded RF Modification

1. Remove power from the radio.
2. Remove the two screws on the top cover and the two on the top rear area of the rear panel.
3. Slide the top cover/heat sink towards the rear, to expose the CNTL-1 unit.
   (The CNTL unit is the inside part of the front panel.)
4. Locate test points TP3001 & TP3002 on the CNTL unit.
   (They are located on the top/center of the CNTL board)
5. **Connect a jumper between TP3001 & TP3002.** An alligator clip will work.
6. **Reconnect power and press and hold [PROC] & [ATT] & [IPO] & [NB] and turn power on.**
7. Release the four keys.
8. The display will show "OFF". **Turn the VFO dial until the display readss "ON".**
9. **Press [PROC] to store the new RF/TX Range.**
10. Remove the Jumper from step 5 above.
11. Reassemble the radio.

Performance Report

Radio ______________________________ Date ____________

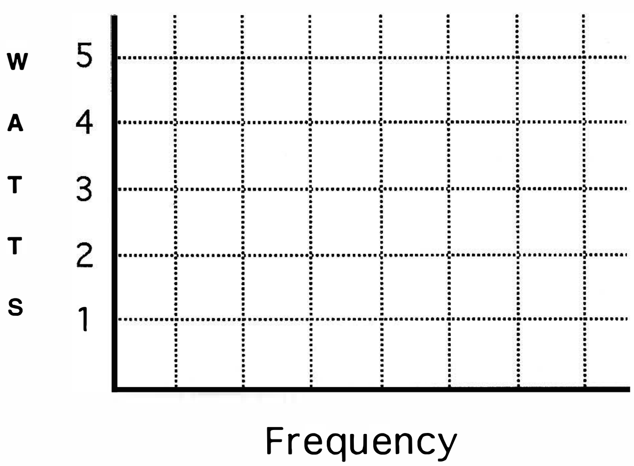
Owner : Name ______________________________________

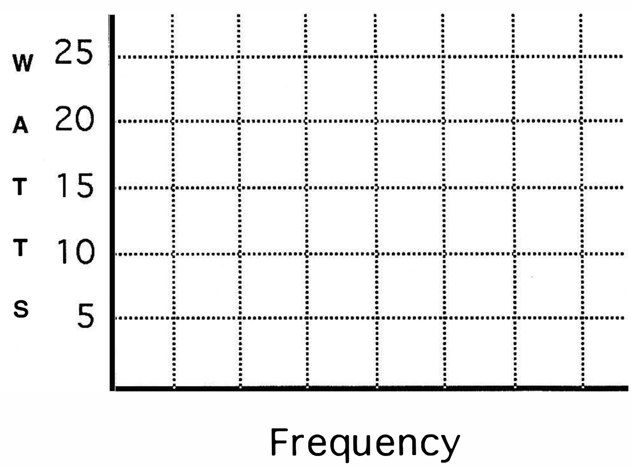
Address ______________________________________

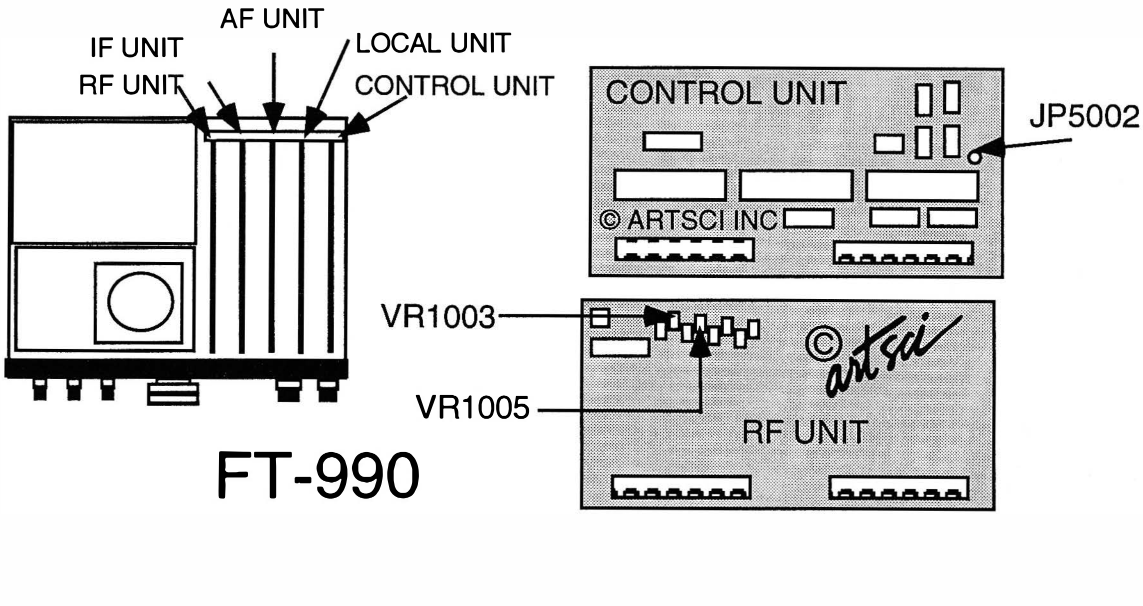
City ____________________ St. ______ Zip ________

Phone (   ) - ______________________________

Description	Before	After
Power out (Low)	________ Watts	________ Watts
Power out (High)	________ Watts	________ Watts
Frequency Error (Simplex)	________ Hz	________ Hz
Frequency Error (Offset)	________ Hz	________ Hz
Receive Sensitivity (Mid-band)	________ uv	________ uv
Receive Sensitivity (_____MHz)	________ uv	________ uv
Receive Sensitivity (_____MHz)	________ uv	________ uv
PL Deviation	________ Hz	________ Hz
DTMF Deviation	________ KHz	________ KHz
Audio Deviation	________ KHz	________ KHz
Lowest usable Freq @ .5 Pwr	________ MHz	________ MHz
Highest usable Freq @ .5 Pwr	________ MHz	________ MHz







Expanded RF Modification

1. Remove power from the radio.
2. Remove the top cover of the transceiver.
3. Locate the Control unit. It is the rightmost of the vertically-mounted circuits boards.
4. Remove the two mounting screws on the boards restraining brackets.
5. Remove the control unit.
6. Locate Jumper pad JP5002. It is located in the next to IC Q5016. IC Q5016 is the rightmost IC of the three large IC in the center of the board.
7. Solder bridge Pad JP5002.
8. Reinstall the Control unit.
9. Locate VR1003 & VR1005 on the RF unit.
10. Connect a 50 Ohm dummy load and a key to the key jack.
11. Set CW mode and the METER to the ALC setting.
12. Dial Frequency 5.000 MHz.
13. Set the RF Power switch fully clockwise.
14. Close PTT and the key. (TRANSMITTING)
15. Adjust VR1003 so that the ALC meter reads to the right edge of the scale.
16. Check frequency range 4.0 - 6.5 MHz to make sure ALC meter reads at least slightly across the entire range.
17. Dial Frequency 8.000 MHz.
18. Adjust VR1005 so that the ALC meter reads to the right edge of the scale.
19. Check frequency range 8.0 - 10.0 MHz to make sure ALC meter reads at least slightly across the entire range.
20. Replace the top cover.

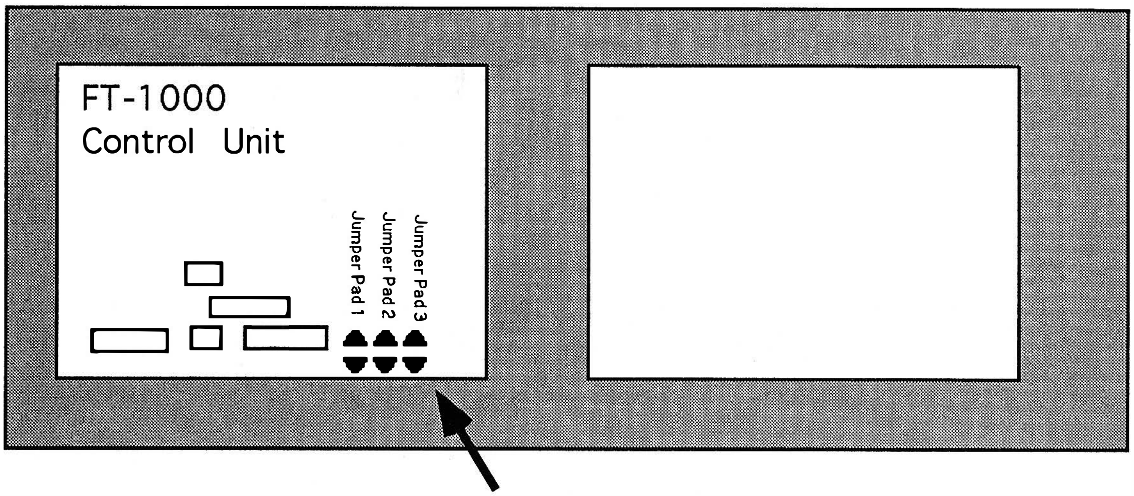
Receive and Transmit Expansion

Expansion Range

.1 - 30 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

FT-1000 FRONT PANEL



Remove Solder Bridge from Pad #3

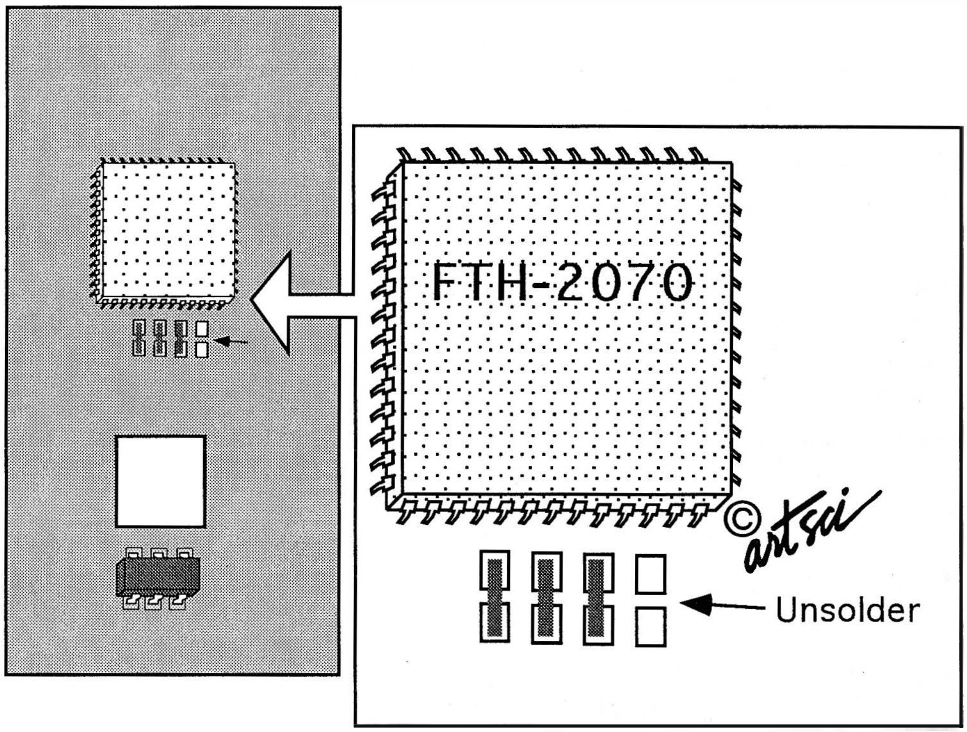
Expanded RF Modification

1. Remove power from the radio.
2. Open the case top and bottom.
3. Locate four crews attaching front panel and remove the top screws. Loosen the bottom screws.
4. Tilt front panel forward.
5. On the left side of the radio, remove the plug from the power supply to the front panel. (gray and white wires)
6. Locate jumper position 3 on Control board.
7. **Unsolder the jumper in position 3**
8. Reassemble the radio.
9. **Reset the microprocessor.**
   (Tum off the Backup Switch, located inside the panel window)

Expansion Range

134 - 174 MHz
400 - 499 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

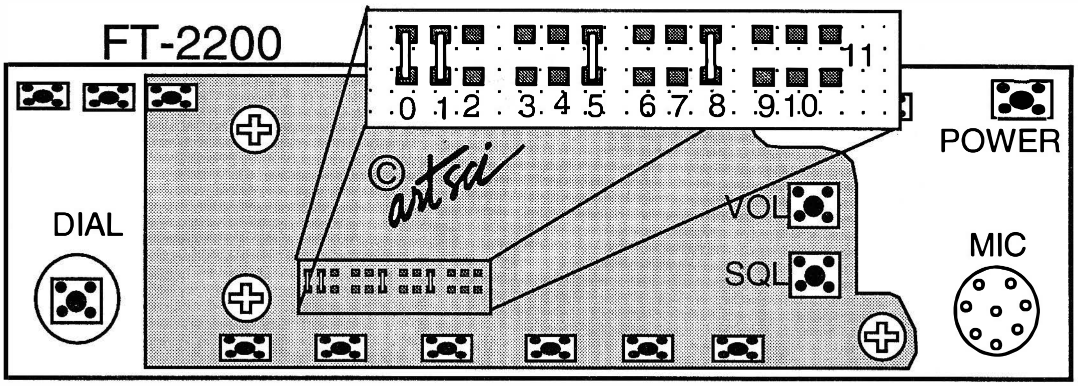
1. Remove battery and Antenna from the radio.
2. Remove screws and open case
3. **Locate and unsolder jumper pad as shown above**
   (Pad connected to Microprocessor pin 11)
4. Reassemble the radio.
5. Reset the Microprocessor
   (Press [PRI] and turn the radio on.)

Expansion Range

110 - 139.995 AM RX
110 - 180 MHz RX
140- 174 MHz TX

Note: A "*" will appear when frequency is below 140 MHz. The AM mode will store in memory channels.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

1. Remove power and antenna
2. Remove top and bottom covers. (the speaker may fall out)
3. Remove the Volume, Squelch and Main tuning knobs from the front of the radio.
4. Remove the front panel (push on all four tabs)
5. Remove the tuning knob retainer nut.
6. Lift off the LCD display assembly.
7. Locate jumper Pads #1,2 & 5.
8. **Remove resistor from pads #1 & 2.**
9. **Remove resistor from pads #5.** (AIRCRAFT Rec Mod)
   (One report suggests the Pad #8 should be jumped in place of pad #5)
10. Reassemble the radio.
11. Reset the microprocessor.
    (Press and hold [MHz] and [CALL] buttons and turn the radio on.

The radio will power up and display 10.000 MHz.

Press [MHz] and dial **110.00** and press **[D/MR]** VHF RX low Limit
Press [MHz] and dial **174.00** and press **[D/MR]** VHF RX High Limit
Press [MHz] and dial **136.00** and press **[D/MR]** VHF TX low Limit
Press [MHz] and dial **174.00** and press **[D/MR]** VHF TX High Limit
Press [F/W] and then **[RPT]** and dial **0.600** and press [RPT] Offset

You will need to cut the Green Wire for 110 - 180 RX
(it is located near the speaker towards the front panel. It is very obvious)

YAESU

Expansion Range

1240.00 MHz - 1300.00 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Expanded RF Modification

1. Remove five screws from the top cover and remove the cover.
2. Remove five screws from the bottom cover and remove the cover.
3. Unplug the speaker.
4. Remove the four screws holding the front panel.
5. Locate jumper pad number 7.
6. **Solder bridge pad number 7.**
7. Locate the reset pins (Located on the front panel and clearly marked).
8. Short the reset pins together for one second.
9. Reassemble the radio.

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Transmit Expansion

Expansion Range

118-174 MHz Rx, 140-174 MHz Tx .
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Expanded RF Modification

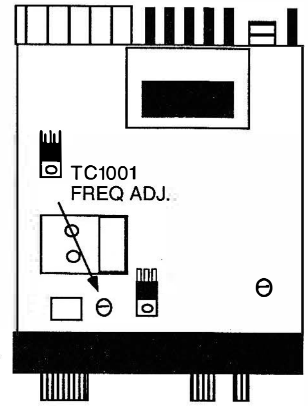
1. Remove Power and Antenna.
2. Locate and remove the two Allen screws from the front panel.
3. Locate and unsolder jumper pad 2. (or follow option below)
4. Locate and solder jump pads 1 & 3.
5. Reassemble the radio.

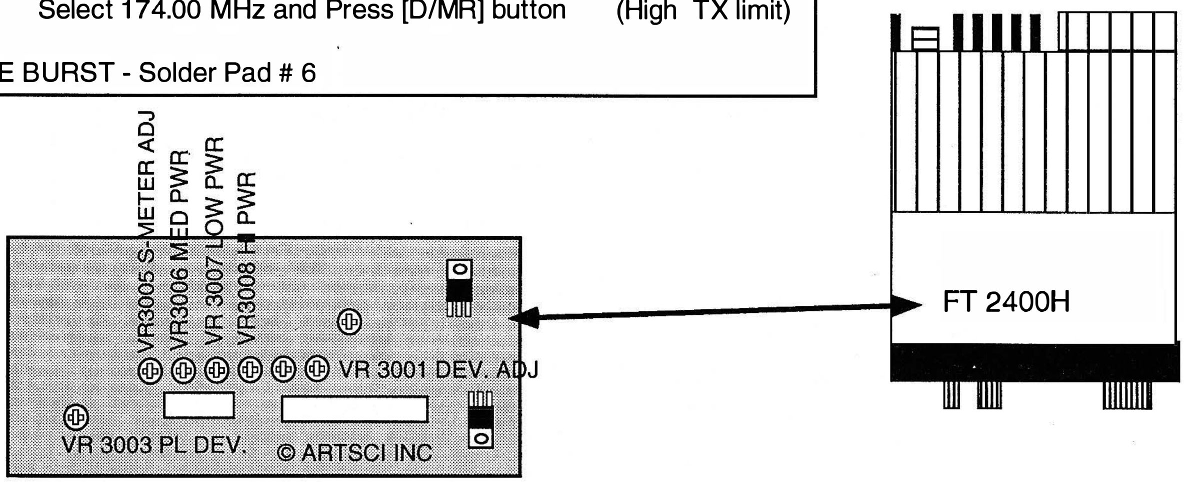
Option #2

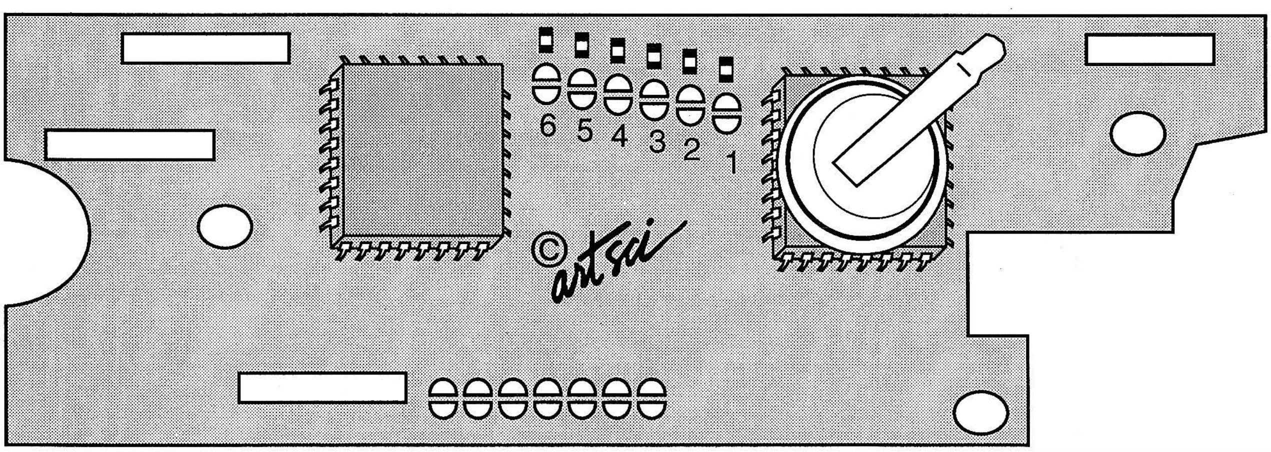
1. Follow steps above, except leave solder pad 2 jumpered.
2. Turn radio on and set the upper and lower limits:

Select 138.00 MHz and Press [D/MR] button	(lower RX limit)
Select 174.00 MHz and Press [D/MR] button	(High RX limit)
Select 138.00 MHz and Press [D/MR] button	(lower TX limit)
Select 174.00 MHz and Press [D/MR] button	(High TX limit)

TONE BURST - Solder Pad # 6





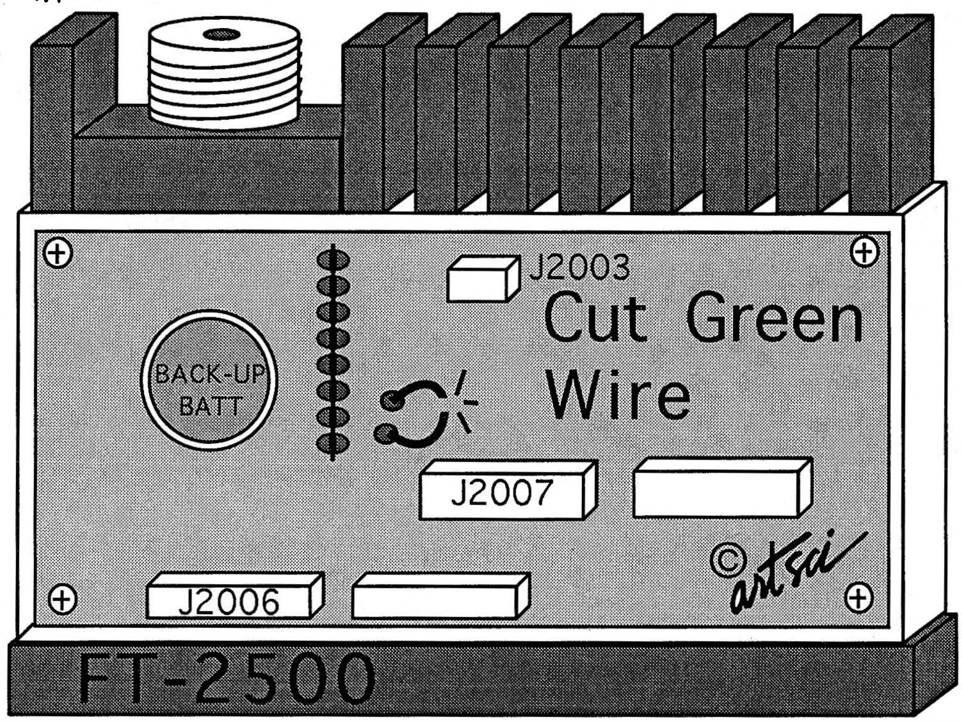


F+2600M
Deixar somente
@JP12
e retirar
MHz+ ANT D
MR

Expansion Range

140 MHz - 174 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



YAESU

Expanded RF Modification

1. Remove Power and Antenna.
2. Remove five (5) screws holding the top cover.
3. Locate and **cut GREEN COLOR WIRE.**
   (The Green wire is located between jumper pad #8 & Ground.)
4. Reassemble the radio.

NOTE: One report instructs that Jumper #3 may need to be solder jumped.

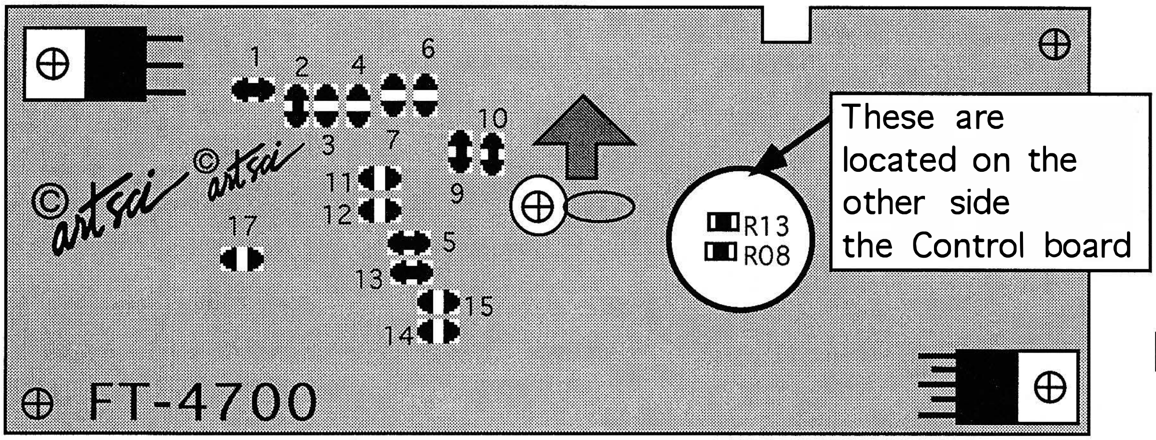
(818) 843-4080 12-4 PST, Fax:(818) 846-2298

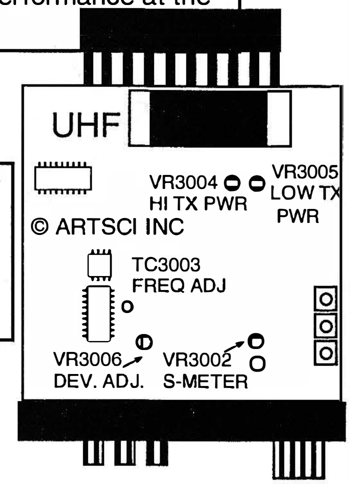
Receive and Transmit Expansion

Expansion Range

RX Range	138 MHz - 174 MHz	410 MHz - 475 MHz
TX Range	138 MHz - 174 MHz	410 MHz - 475 MHz

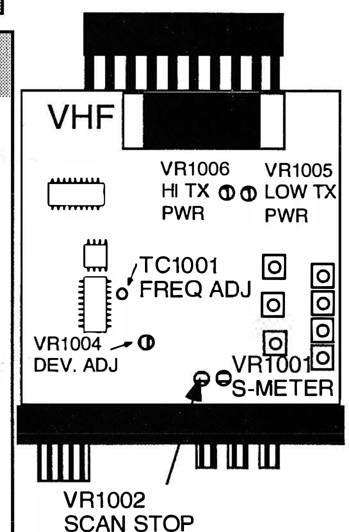
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.





Expanded RF Modification

1. Remove Front Panel.
2. Locate and **jump pads 1,2,5,9,10 & 13.** Solder short them carefully. (The other jumper pads must remain undisturbed)
3. Reassemble radio.
4. Turn power on. (The microprocessor has been reset)
5. Use the [UP] & [DOWN] buttons and dial to set the UHF range as follows :
   410.000 MHz Press [D/MR] button
   475.000 MHz Press [D/MR] button
6. The display will show 47.75 (IF freq. for UHF). Press [D/MR]
7. Use the up/down buttons and dial to set the VHF range as follows :
   138.000 MHz Press [D/MR] button
   174.000 MHz Press [D/MR] button
8. The display will show 17.3 (IF freq. for VHF).Press [D/MR]
9. The repeater shifts for both bands are reset to 000. They must be set using the [F] and [PRT] buttons. Refer to page 27 in the user manual.



Beep Level Reduction

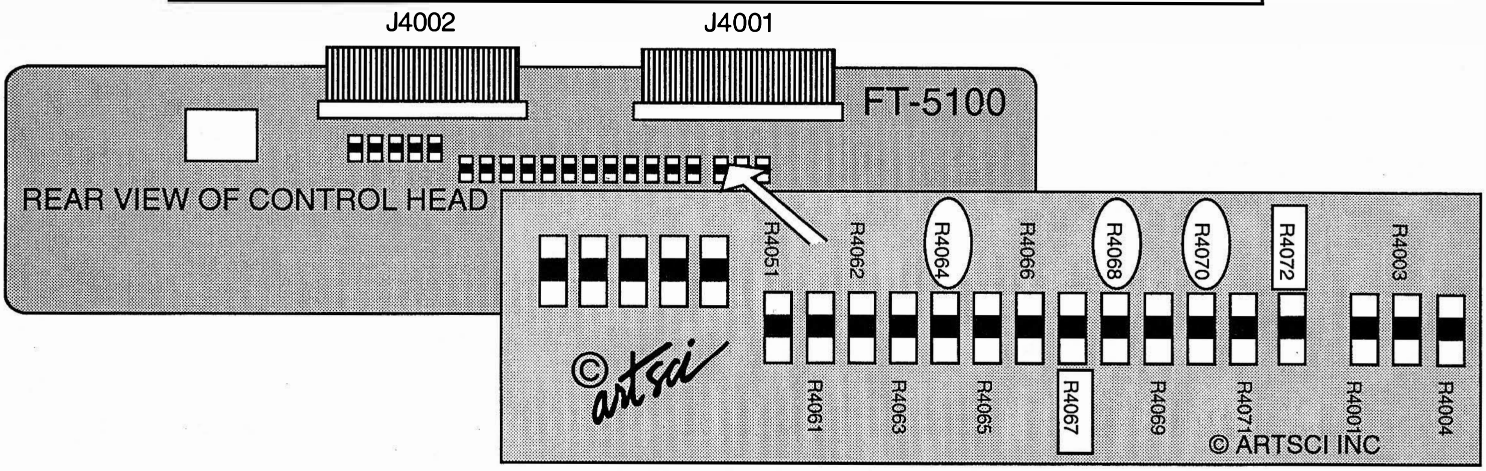
1. Remove Front Panel
2. Remove the five screws holding Control unit in place.
3. Remove P10 from J04
4. Remove P09 from J03
5. Carefully flip the Control board to access the back side.
6. Locate R08 and R13.
7. Replace R08 and R13 with 560 ohm chip resistors (YAESU # J24205561
8. Reconnect the two Plugs P10 & P09
9. Reassemble the radio.

YAESU

Receive and Transmit Expansion
Cross Band & Mic Band Change

Expansion Range

128 Mhz - 180 Mhz & 420 - 475 Mhz.
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Expanded RF Modification

1. Remove power and antenna from the radio.
2. Remove 6 screws from top and bottom covers, remove the covers (watch speaker).
3. Remove the 2 silver screws from each side of the radio securing the control head.
4. Carefully pull the Control Head from the radio. DO NOT REMOVE RIBBON CABLES
5. Locate and **remove chip resistor R4072.** (RX mod)
6. Locate and **remove chip resistor R4067.** (Mic/Band mod)
7. Locate and **install jumpers in positions R4070, R4068 & R4064**. (RX mod)
   STOCK US JUMPERS: 4001, 4003, 4004, 4051, 4061, 4062, 4067, 4072
   POST MOD JUMPERS 4001, 4003, 4004, 4051, 4061, 4062, 4064, 4068, 4070
8. Reassemble the radio.
9. Tum the radio on
   (The display will show 300.000 & 20.000)
10. Press [MHz] and dial 420.00 and press [D/MR] - UHF RX low limit
11. Press [MHz] and dial 475.00 and press [D/MR] - UHF RX high limit
12. Press [MHz] and dial 420.00 and press [D/MR] - UHF TX low limit
13. Press [MHz] and dial 475.00 and press [D/MR] - UHF TX high limit
14. Press [MHz] and dial 128.00 and press [D/MR] - VHF RX low limit
15. Press [MHz] and dial 180.00 and press [D/MR] - VHF RX high limit
16. Press [MHz] and dial 128.00 and press [D/MR] - VHF TX low limit
17. Press [MHz] and dial 180.00 and press [D/MR] - VHF TX high limit
18. Press [F/W] then [RPT] and dial 5.000 and press [RPT] - UHF offset
19. Press [F/W] then [REV] and dial 25.0 and press [RPT]. - Channel Step
20. Press [BAND] then [F/W] then [RPT] and dial 0.600 and press [RPT] - VHF offset.

SOFT RESET (Memory clear) - Press and hold [D/MR] & [REV] and tum radio on.

MORE ON NEXT PAGE

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Continued from previous page

Cross Band Operation

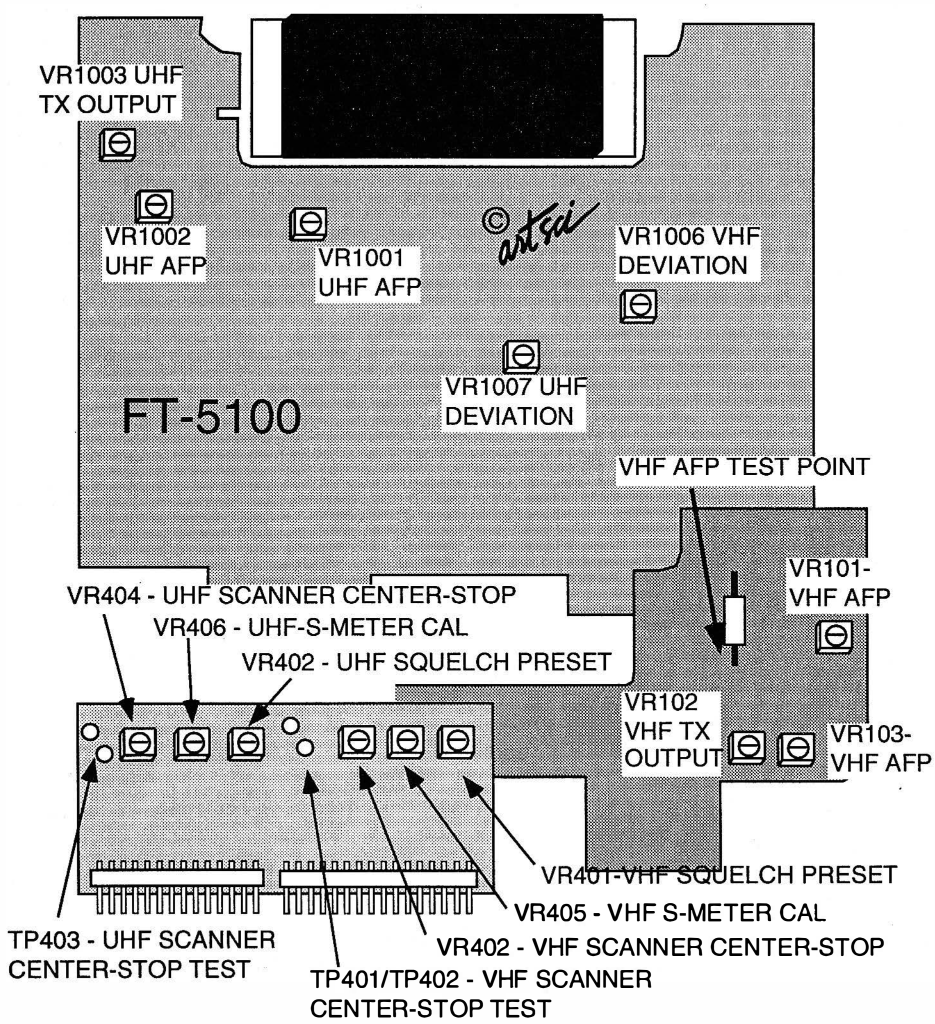
1. Select the desired VHF & UHF frequencies
2. Select low power transmit on both bands (To protect your radio)
3. If desired, adjust the TX time out timer value. (The default is 15 minutes)

To adjust: Press and hold [LOW] & tum power on.
Dial desired time out value (0-60 minutes)
Tum radio off.

TURN ON - Press and hold [RPT] and tum radio on.
TURN OFF - Press and hold [RPT] and tum radio on.

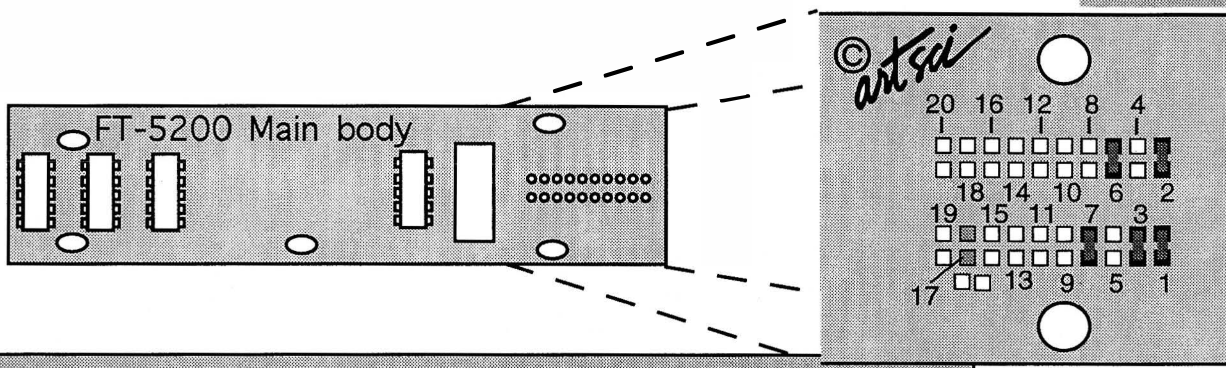
Microphone Modification

Remove solder from Jumper R4067 to make Microphone [D/MR] button switch band on the radio.



(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Receive and Transmit Expansion



Expanded RF Modification

1. Remove power from the radio.
2. Release and remove the front panel.
3. Remove the six screws from the top cover of the radio.
4. Remove the six screws from the bottom of the radio.
5. Remove the top and bottom covers.
   (CAUTION: the speaker might fall out.)
6. Remove the two screws & front control head mounting plate from the radio.
7. Locate solder pads 1 - 7.
   (Standard jumpered pads are 2 and 7 only)
8. **Solder jump pads 1,3 and 6**
   (Pads 1,2,3,6 & 7 are now jumpered)
9. **Unsolder jump pad 17.** (X-Band repeater mod) May be done at the factory!
   Caution: Be sure to work on PAD 17. see drawing below
10. Install front panel mounting plate.
11. Reassemble the radio.
12. Reconnect the power to the radio.
13. **Press and hold [D/MR], [F/W] & [REV] keys and turn radio on.**
    (Display will show 000.000 & 300.000 on the display)
14. **Set the VHF Receive and Transmit limits:**

Enter 118.00 MHz and press [D/MR]	(VHF RX Low)
Enter 174.00 MHz and press [D/MR]	(VHF RX High)
Enter 140.00 MHz and press [D/MR]	(VHF TX Low)
Enter 174.00 MHz and press [D/MR]	(VHF TX High)

15 **Set the UHF Receive and Transmit limits:**

Enter 420.00 MHz and press [D/MR]	(UHF RX Low)
Enter 475.00 MHz and press [D/MR]	(UHF RX High)
Enter 420.00 MHz and press [D/MR]	(UHF TX Low)
Enter 475.00 MHz and press [D/MR]	(UHF TX High)

16. Press [Function] then [RPT] and select 5 MHz Repeater offset for UHF band.
17. Press [Function] then [RPT] and select 600 kHz Repeater offset for VHF band.

F + MR + REV

Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz. Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

YAESU

More on Next Page

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Cross Band & Alignment Controls

Cross Band Repeater

To activate X-Band repeater function:

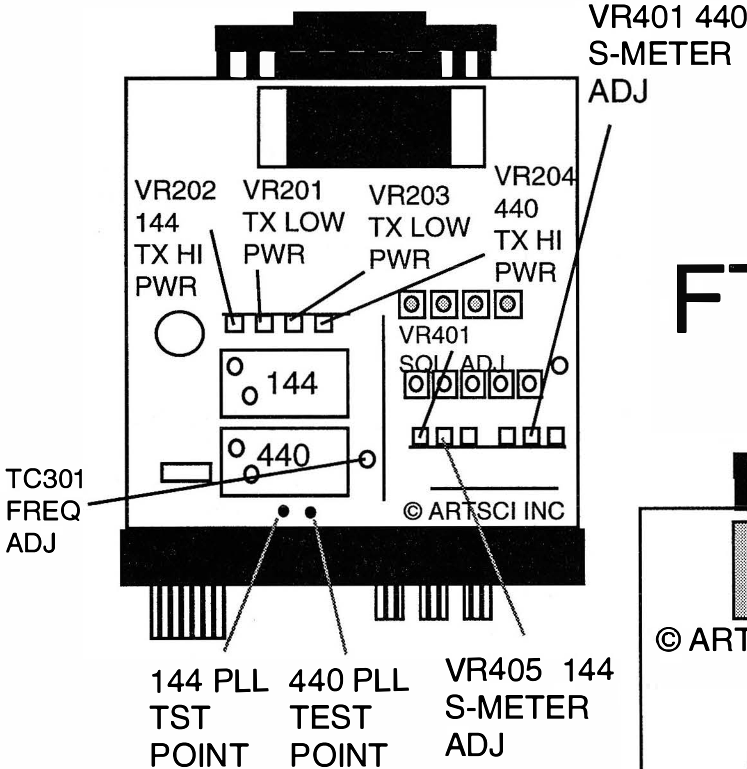
Press and hold [RPT] and turn power on.
It is recommended that you unplug the microphone during X-Band operation. (The Mic is live)

• Adjust the volume control to adjust repeat audio level.

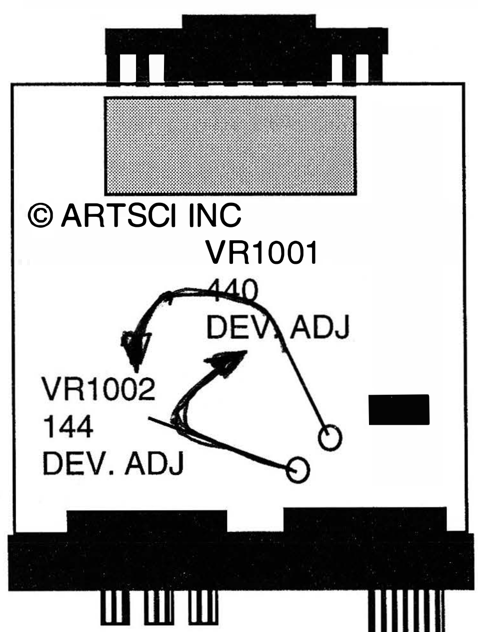
Other Options

Override automatic display dimmer:
Press and hold [MHz] and tum radio on: Use Channel knob to select brightness.

Keyboard VHF Expanded Receive:
Press and hold [DVS] & [MHz] keys and tum radio on.



FT-5200



OTHER CB's
CONTINUED

COMPANY	MODEL	REMOVE THIS PART
JOHNSON	4120	CR-12
	4125	CR-12
	4135	CR-12
	4140	R-37
	4145	R-37
	4230	R-37
KRACO	KCB-4000	VR-4
	KCB-4010	RV-2
	KCB-4020	RV-2
	KCB-4030	RV-2
	KCB-4045	RV-2
LAFAYETTE	HB-650	RV-102
	HB-750	RV-102
	HB-870	RV-14=AM & RV-4=SSB
	HB-940	RV-2
	SSB-100	RV-7=AM & RV-8=SSB
	SSB-140	RV-12=AM & RV-11=SSB
	TELSTAT 1140	RV-2
	TELSTAT 1240	VR-305

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

OTHER CB's
CONTINUED

COMPANY	MODEL	REMOVE THIS PART
GEMTRONICS	GTX-44	RV-2
	GTX-55	RV-2
	GTX-66	RV-2
	GTX-77	RV-2
	3000-GTX	R-93
	4040	D-481
	5000-GTX	VR-4
HY-GAIN	672 B	RV-2
	674 B	VR-7
	2679 I	RV-2
	2680 II	RV-2
	2681 II	RV-2
	2682 II	RV-2
	2683 III	RV-2
	2701 I	RV-2
	2702 II	RV-2
	2703 III	RV-2
	2795	RV-14=AM & RV-4=SSB
	2795 DX	RV-14=AM & RV-4=SSB
	V SSB	VR-7
JC PENNY	981-6221	D-501
	981-6237	D-7
	681-6241	Q-405
	6218	RV-2

OTHER CB's
CONTINUED

COMPANY	MODEL	REMOVE THIS PART
DAK	IX	Q-202
	X	Q-37 & Q-38
FANNON	12SF	R-76
	190 DF	VR-301
	182F	D-12
	184DF	D-12
	185DF	VR-301
	185PLL	VR-301
	SFT 400	D-10
FUZZBUSTER	2-50	Q-8
GE	3-5801A	VR-7
	3-5804A	VR-7
	3-5804D	RV-2
	3-5810B	RV-2
	3-5811B	RV-2
	3-5812A	RV-2
	3-5813A	RV-2
	3-5813B	RV-2
	3-5814A	C-98
	3-5814B	RV-2
	3-5818A	RV-2
	3-5819A	RV-2
	3-5821A	VR-10
	3-5821B	VR-10
	3-5869A	RV-2
	3-5871A	VR-11
	3-5871B	VR-11
	3-5875A	RV-9=AM & VR-201=SSB

OTHER CB's
CONTINUED

COMPANY	MODEL	REMOVE THIS PART
COLT	190	R-71
	222	C-228
	290	RV-2
	320 DX	RV-14=AM & RV-4=SSB
	320 FM	RV-14=AM & RV-4=SSB
	350	R-121
	390	RV-2
	480	RV-12=AM & RV-11=SSB
	485	RV-12=AM & RV-11=SSB
	800	RV-2
	1000	RV-12=AM & RV-11=SSB
	1200 DX	RV-14=AM & RV-4=SSB
CONVOY	CON-400	R-129
COURIER	BLAZER 40D	VR-9
	CARAVELLE 40D	R-504
	CENTURIAN 40	D-24
	CENTURION 40D	D-46
	CHIEF 23	X-8
	CONQUEROR	R-504
	GLADIATOR	D-46
	NIGHT RIDER 40	VR-301
	RANGLER 40	VR-301
	RENEGADE 40	VR-9
	ROGUE 40	VR-5
CRAIG	L101	R-226
	L-321	R-605=AM & R-20=SSB

OTHER CB's

REMOVE ALC CIRCUIT (Higher TX power)

1. Remove Power and Antenna.
2. Remove screws and open the case.
3. Locate the indicated part and remove it.
4. Reassemble the radio.

COMPANY	MODEL	REMOVE THIS PART
ALARON	B4900	Q-201
AUDIOVOX	WINSOR	D-12
	100	D-12
	CB-930	RV-2
	CB-950	D-39
	CBH-990	RV-2
	CBR-9600	RV-105
BROWNING	BARON	R-134=AM & R-130=SSB
	BROWNIE	Q-13
	MARK III	R-38=AM & R-69=SSB
	SABRE	CD-11
	SST-2	CD-11
CLARICON	PRIVATEER	CR-107

REALISTIC CB's

REMOVE ALC CIRCUIT (Higher TX power)

1. Remove Power and Antenna.
2. Remove screws and open the case.
3. Locate the indicated part and remove it.
4. Reassemble radio.

MODEL	REMOVE THIS PART
TRC-417	Q-19
TRC-421	D-16
TRC-422	Q-11
TRC-432	Q-12
TRC-440	D-107
TRC-448	VR-5=AM & VR-204=SSB
TRC-449	VR-7=AM & CT-7=SSB
TRC-452	VR-207
TRC-454	VR-702
TRC-455	R-504
TRC-457	VR-7=AM & CT-7=SSB
TRC-461	VR-2
TRC-462	D-17
TRC-467	D-109
TRC-468	R-42
TRC-469	VR-5
TRC-473	D-17
TRC-410	Q-12
TRC-413	R-85
TRC-415	Q-7
TRC-427	C-78
TRC-428	R-90
TRC-433	Q-15
TRC-451	VR-5=AM & VR-6=SSB
TRC-453	R-146
21-1537	D-17

COBRA CB's

REMOVE ALC CIRCUIT (Higher TX power)

1. Remove Power and Antenna.
2. Remove screws and open the case.
3. Locate the indicated part and remove it.
4. Reassemble radio.

MODEL	REMOVE THIS PART
18-LTD	R-87
19 PLUS	D-502
20 PLUS	VR-502
21 PLUS	D-20
21 GTL	TR-14
21 LTD	TR-14 OR D9
21 XLR	TR-20
25 GTL	TR-14
25 PLUS	D-20
27	X8
29 GTL	D-20
29 PLUS	R-79 OR D-20
31 PLUS	D-19
32 XLR	TR-18
33 PLUS	D-17
40 PLUS	VR-104
78 X	C-49
85	D-9
86 XLR	CD-9
87 GTL	VR-6
89 GTL	VR-6
89 XLR	VR-5
132 XLR	R-134 = AM R-130 = SSB'
135 XLR	R-134 = AM R-130 = SSB'
138 XLR	TR-23
139 XLR	R-132
140 GTL	TR-32
142 GTL	TR-32
148 DX	VR-14=AM & VR-12=SSB
148 GTL	TR-24
150 GTL	RV-14=AM & RV-4=SSB
1000 GTL	VR-6
2000 GTL	TR-24 & C-232
REMOTE CONTROL	D-401

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Remove ALC Circuit (Higher TX Power)

TRUTH TABLE FOR MB8719 IC

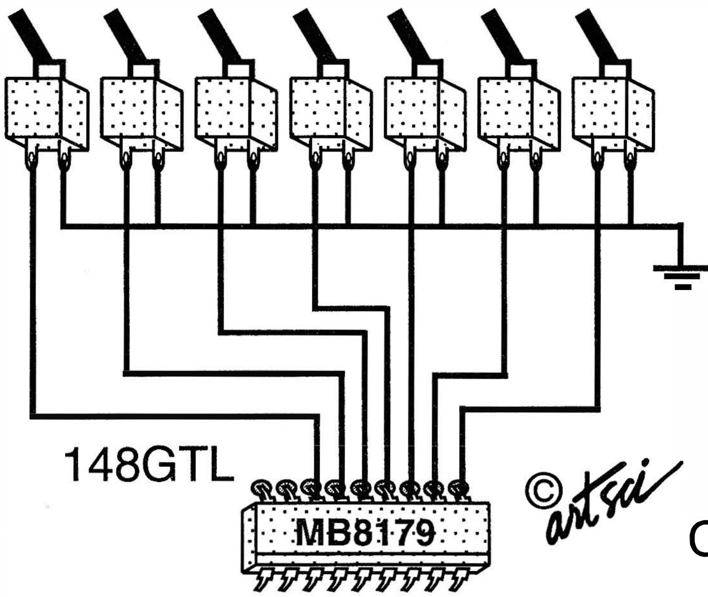
Frequency		10	11	12	13	14	15	16
26.815	=	1	0	0	0	0	0	0
26.825	=	1	0	0	0	0	0	1
26.835	=	1	0	0	0	0	1	0
26.845	=	1	0	0	0	0	1	1
26.855	=	1	0	0	0	1	0	0
26.865	=	1	0	0	0	1	0	1
26.875	=	1	0	0	0	1	1	0
26.885	=	1	0	0	0	1	1	1
26.895	=	1	0	0	1	0	0	0
26.905	=	1	0	0	1	0	0	1
26.915	=	1	0	0	1	0	1	0
26.925	=	1	0	0	1	0	1	1
26.935	=	1	0	0	1	1	0	0
26.945	=	1	0	0	1	1	0	1
26.955	=	1	0	0	1	1	1	0
26.965	=	1	0	0	1	1	1	1
26.975	=	1	0	1	0	0	0	0
26.985	=	1	0	1	0	0	0	1
26.995	=	1	0	1	0	0	1	0
27.005	=	1	0	1	0	0	1	1
27.015	=	1	0	1	0	1	0	0
27.025	=	1	0	1	0	1	0	1
27.035	=	1	0	1	0	1	1	0
27.045	=	1	0	1	0	1	1	1
27.055	=	1	0	1	1	0	0	0
27.065	=	1	0	1	1	0	0	1
27.075	=	1	0	1	1	0	1	0
27.085	=	1	0	1	1	0	1	1
27.095	=	1	0	1	1	1	0	0
27.105	=	1	0	1	1	1	0	1
27.115	=	1	0	1	1	1	1	0
27.125	=	1	0	1	1	1	1	1
27.135	=	1	1	0	0	0	0	0
27.145	=	1	1	0	0	0	0	1
27.155	=	1	1	0	0	0	1	0
27.165	=	1	1	0	0	0	1	1
27.175	=	1	1	0	0	1	0	0
27.185	=	1	1	0	0	1	0	1
27.195	=	1	1	0	0	1	1	0
27.205	=	1	1	0	0	1	1	1
27.215	=	1	1	0	1	0	0	0
27.225	=	1	1	0	1	0	0	1
27.235	=	1	1	0	1	0	1	0
27.245	=	1	1	0	1	0	1	1
27.255	=	1	1	0	1	1	0	0
27.265	=	1	1	0	1	1	0	1
27.275	=	1	1	0	1	1	1	0
27.285	=	1	1	0	1	1	1	1
27.295	=	1	1	1	0	0	0	0
27.305	=	1	1	1	0	0	0	1
27.315	=	1	1	1	0	0	1	0
27.325	=	1	1	1	0	0	1	1
27.335	=	1	1	1	0	1	0	0
27.345	=	1	1	1	0	1	0	1
27.355	=	1	1	1	0	1	1	0
27.365	=	1	1	1	0	1	1	1
27.375	=	1	1	1	1	0	0	0
27.385	=	1	1	1	1	0	0	1
27.395	=	1	1	1	1	0	1	0
27.405	=	1	1	1	1	0	1	1
27.415	=	1	1	1	1	1	0	0
27.425	=	1	1	1	1	1	0	1
27.435	=	1	1	1	1	1	1	0
27.445	=	1	1	1	1	1	1	1

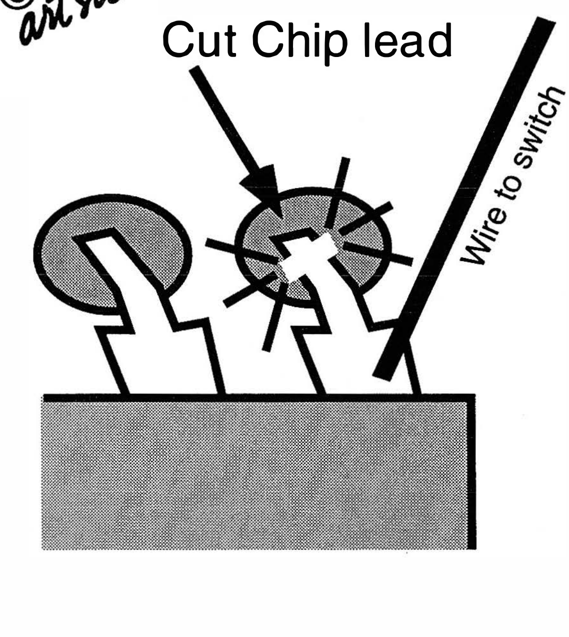
Frequency		10	11	12	13	14	15	16
27.455	=	0	0	0	0	0	0	0
27.465	=	0	0	0	0	0	0	1
27.475	=	0	0	0	0	0	1	0
27.485	=	0	0	0	0	0	1	1
27.495	=	0	0	0	0	1	0	0
27.505	=	0	0	0	0	1	0	1
27.515	=	0	0	0	0	1	1	0
27.525	=	0	0	0	0	1	1	1
27.535	=	0	0	0	1	0	0	0
27.545	=	0	0	0	1	0	0	1
27.555	=	0	0	0	1	0	1	0
27.565	=	0	0	0	1	0	1	1
27.575	=	0	0	0	1	1	0	0
27.585	=	0	0	0	1	1	0	1
27.595	=	0	0	0	1	1	1	0
27.605	=	0	0	0	1	1	1	1
27.615	=	0	0	1	0	0	0	0
27.625	=	0	0	1	0	0	0	1
27.635	=	0	0	1	0	0	1	0
27.645	=	0	0	1	0	0	1	1
27.655	=	0	0	1	0	1	0	0
27.665	=	0	0	1	0	1	0	1
27.675	=	0	0	1	0	1	1	0
27.685	=	0	0	1	0	1	1	1
27.695	=	0	0	1	1	0	0	0
27.705	=	0	0	1	1	0	0	1
27.715	=	0	0	1	1	0	1	0
27.725	=	0	0	1	1	0	1	1
27.735	=	0	0	1	1	1	0	0
27.745	=	0	0	1	1	1	0	1
27.755	=	0	0	1	1	1	1	0
27.765	=	0	0	1	1	1	1	1
27.775	=	0	1	0	0	0	0	0
27.785	=	0	1	0	0	0	0	1
27.795	=	0	1	0	0	0	1	0
27.805	=	0	1	0	0	0	1	1
27.815	=	0	1	0	0	1	0	0
27.825	=	0	1	0	0	1	0	1
27.835	=	0	1	0	0	1	1	0
27.845	=	0	1	0	0	1	1	1
27.855	=	0	1	0	1	0	0	0
27.865	=	0	1	0	1	0	0	1
27.875	=	0	1	0	1	0	1	0
27.885	=	0	1	0	1	0	1	1
27.895	=	0	1	0	1	1	0	0
27.905	=	0	1	0	1	1	0	1
27.915	=	0	1	0	1	1	1	0
27.925	=	0	1	0	1	1	1	1
27.935	=	0	1	1	0	0	0	0
27.945	=	0	1	1	0	0	0	1
27.955	=	0	1	1	0	0	1	0
27.965	=	0	1	1	0	0	1	1
27.975	=	0	1	1	0	1	0	0
27.985	=	0	1	1	0	1	0	1
27.995	=	0	1	1	0	1	1	0
28.005	=	0	1	1	0	1	1	1
28.015	=	0	1	1	1	0	0	0
28.025	=	0	1	1	1	0	0	1
28.035	=	0	1	1	1	0	1	0
28.045	=	0	1	1	1	0	1	1
28.055	=	0	1	1	1	1	0	0
28.065	=	0	1	1	1	1	0	1
28.075	=	0	1	1	1	1	1	0
28.085	=	0	1	1	1	1	1	1

Expanded RF Modification

Note: This mod requires seven toggle switches to control Frequency. See frequency chart on the next page.

1. Remove Power and Antenna.
2. Remove screws and open the case.
3. Locate Synthesizer chip labeled MB8719
4. Cut wires connecting channel switch and pins 10-16.
5. Solder an on/off switch to each pin (pin 10-16)
6. reassemble radio.





MORE ON NEXT PAGE

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

CB Radio Modifications

CB Models

Robyn	Remove ALC control.
Royce	Remove ALC control.
Sanyo	Remove ALC control.
SBE	Remove ALC control.
Sears	Remove ALC control.
Siltronics	Remove ALC control.
Sharp	Remove ALC control.
Superstar	Remove ALC control.
Teaberry	Remove ALC control.
Tenna Phase	Remove ALC control.
Tram	Remove ALC control.
Truetone	Remove ALC control.
Uniden	Remove ALC control.
VTAC	Remove ALC control.
Vector	Remove ALC control.
Wards	Remove ALC control.
Whistler	Remove ALC control.
Xtal	Remove ALC control.
Zexon	Remove ALC control.

1996N
6MQS

CB Radio Modifications

COBRA Amateur Radio

148GTL	Expanded RF
Truth Table	

CB Models

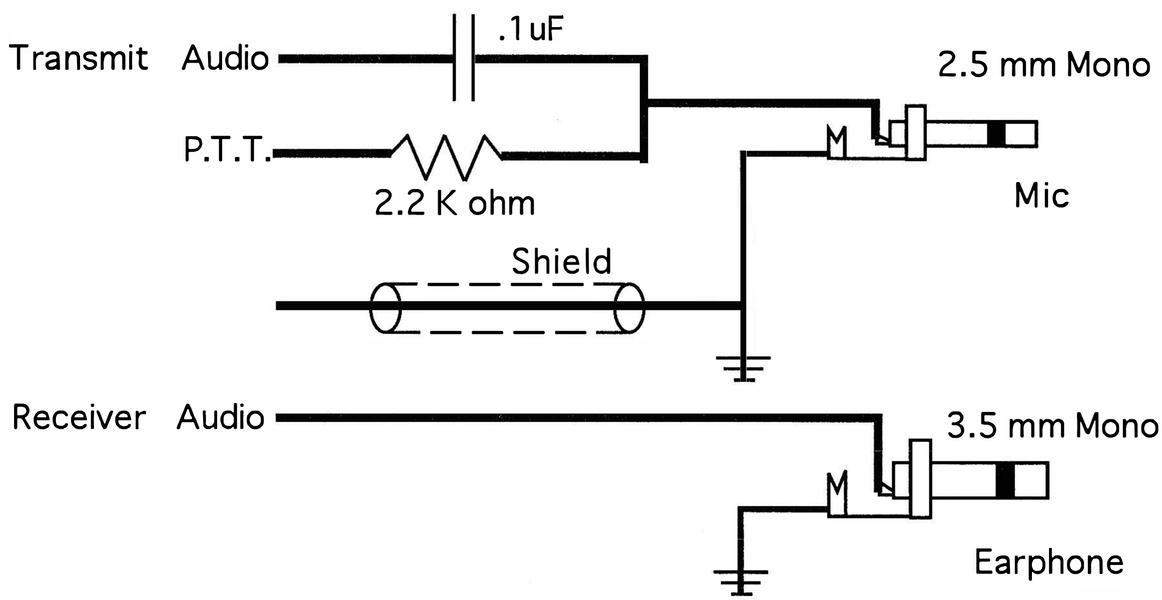
Cobra	Remove ALC control
Realistic	Remove ALC control
Alaron	Remove ALC control
Audiovox	Remove ALC control
Browning	Remove ALC control
Clarion	Remove ALC control
Colt	Remove ALC control
Convoy	Remove ALC control
Courier	Remove ALC control
Craig	Remove ALC control
Dak	Remove ALC control
Fannon	Remove ALC control
Fuzzbuster	Remove ALC control
GE	Remove ALC control
Gemtronics	Remove ALC control
Hy-gain	Remove ALC control
JC Penny	Remove ALC control
Johnson	Remove ALC control
Kraco	Remove ALC control
Layfayette	Remove ALC control
Midland	Remove ALC control
Mopar	Remove ALC control
Pace	Remove ALC control
Palomar	Remove ALC control
Panasonic	Remove ALC control
Pearce Sim	Remove ALC control
President	Remove ALC control
Raider	Remove ALC control
Ranger	Remove ALC control
RCA	Remove ALC control
RCI	Remove ALC control
Regency	Remove ALC control

Handheld to TNC Connections

FT-23,33,73,109,209,709,727,470,411,811,911

Parts Required

1 - 0.1 uF, 50V Disk Ceramic Cap
2 - 2.2k Ohms, 1/4 Watt Resistor
1 - 2.5 mm audio plug
1 - 3.5 mm audio plug



(818) 843-4080 12-4 PST, Fax:(818) 846-2298

Reset Commands

Radio	Function	Command
FT-11		
FT-41	Master Reset	Press and hold [UP] & [DOWN] & turn on.
FT-26		
FT-76	Ham/Extended RX	Press and hold [UP] & [DOWN] & turn on.
	Factory Defaults Soft Reset (memory clear)	Press and hold [T] & [REV] & turn on.
	Master Reset	Press and hold [D/MR] & [T] & [REV] & turn on. (must enter new band limits)
FT-411E		
FT-811		
FT-911		
FT-415		
FT-416		
FT-470		
FT-815		
FT-530	Ham/Extended RX	Press and hold [UP] & [DOWN] & turn on.
	Factory Defaults	Press and hold [T] & [REV] & turn on.
FT-2400H	Ham/Extended RX	Press and hold [UP] & [DOWN] & turn on
	Memory Reset	Press [D/MR] & [F/w] & turn on.
	Factory Defaults	Press [D/MR] & [REV/SKIP] & turn on & turn off & Press & hold [D/MR] & turn on.
FT-5100	Factory Defaults	Press and hold [D/MR] & [REV] & turn on.
FT-5200	Ham/Extended RX	Press and hold [MHz] & [DVS/HOLD] & turn on.
	Factory Defaults	Press and hold [D/MR] & [REV] & turn power on.
FT-212		
FT-712		
FT-912	Ham/Extended RX	Press and hold [MHz] & [VOICE] & turn power on.
FT-290		
FT-690		
FT-790II	Hard Reset	Switch internal backup switch off of 30 seconds.
FT-736R	Hard Reset	Switch internal backup switch off of 30 seconds.

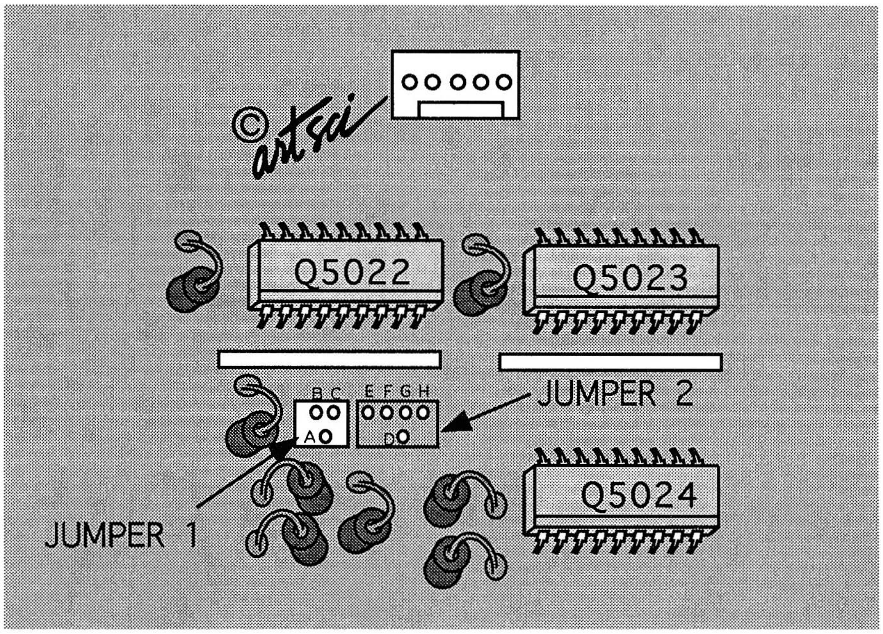
Reset Commands

Radio	Function	Command
FT-1000	Hard Reset	Flip off BACKUP switch. (Inside the top panel window)
	Memory Reset	Press & hold [SUB] & [ENTER] & turn power on
	Soft Reset	Press & hold [1.5] & [3.5] & turn power on. (For checking Display and ROM version)
FT-990	Hard Reset	Flip off BACKUP switch. (Inside the top panel window)
	Memory Reset	Press & hold [GEN] & [ENT] & turn power on
	Soft Reset	Press & hold [1.5] & [3.5] & turn power on. (For checking Display and ROM version)
FT-890	Hard Reset	Press & hold [HAM/GEN] & [CLAR] & turn power on.
	Soft Reset	Press & Hold [A/B] & [A=B] & turn power on (For checking Display and ROM version)
FT-767GX	Hard Reset	Switch [B.U.] off & turn radio on.
	Freq. Range Reset	Press and hold [OFFSET] & turn power on. (140.00 - 148.99 MHz) Press and hold [CLAR] & turn power on. (140.00 - 145.99 MHz) Press and hold [MCK] & turn power on. (140.00 - 1487.99 MHz)
	430/440 toggle	Press and hold [0] & turn power on.
FT-757GX	Hard Reset	Press & hold [MARKER] & [LINEAR] & turn power on.
FT-747GX	Hard Reset	Slide Backup switch towards tuning dial. (Located on bottom of panel)
FRG-8800	Hard Reset	Remove backup batteries
FRG-100	Hard Reset	Turn off backup switch on rear of radio for 5 seconds.

Receive and Transmit Expansion

Expansion Range

RX: 150 kHz - 30 MHZ
TX: 1.8 MHz - 30 MHz



Expanded RF Modification

1. Unplug the power from the radio.
2. Open radio and locate the CONTROL UNIT.
3. **Locate and install a Jumper between Point A and point B.**
   No Jumper to point C.
4. **Remove any jumper to point D.** (Transmit range point)
5. Reassemble radio.

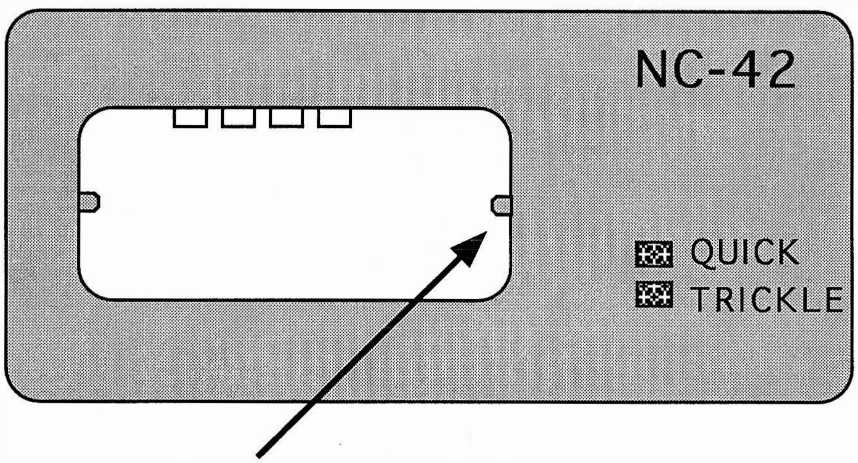
Charging additional batteries

Modification

This modification will allow you to charge FNB-12S, FNB-14, FNB-17, FNB-25, FNB-26 and FNB-27 batteries.

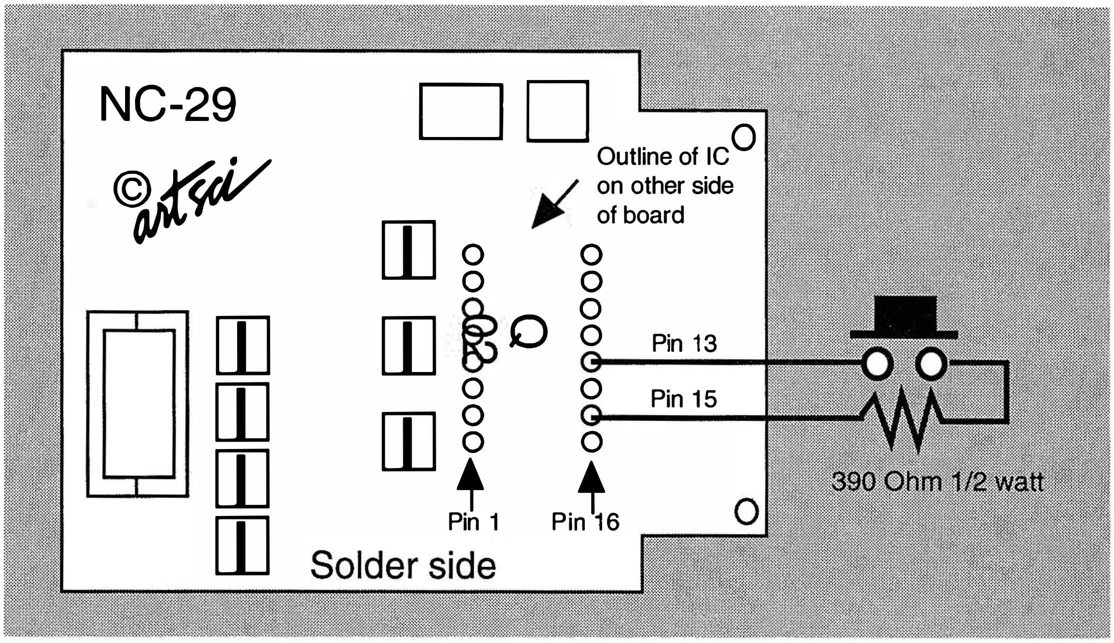
1. Remove the ridge on the inside of the battery charging cup. (right side only)

Charging time for all batteries should be about 1 hour or less.



Remove this ridge. Use a file or similar tool

(818) 843-4080 12-4 PST, Fax:(818) 846-2298



Modification

This modification will allow you to select the amount of time used to fast charge your battery pack. The standard NC-29 will fast charge a battery for five hours and then switch to trickle charge every time a battery is inserted, even if the battery is fully charged.

This modification will provide a push button to speed up the Internal clock. By pressing the button, you can watch the time remaining LEDs on the panel and select the amount of full charging time.

1. Unplug the charger for the AC power
2. Locate IC Q02. see drawing
3. Solder tack a 390 Ohm 1/2 watt resistor and a normally open push button to Pins 13 & 15
4. Position the push button switch in a handy position on the plastic case.

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

VX 1 R

Jumper
Fechar
0
1
2
colocar Diodo

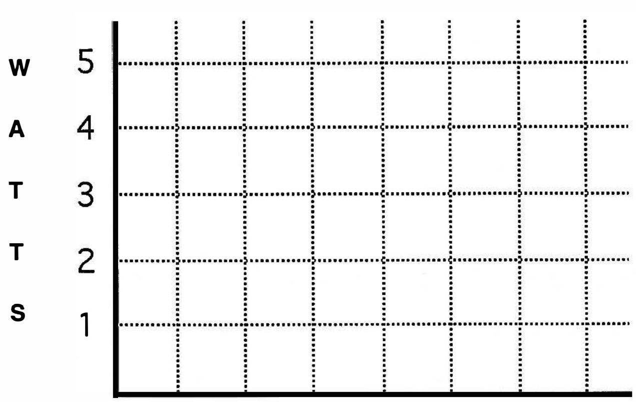
Performance Report

Reset

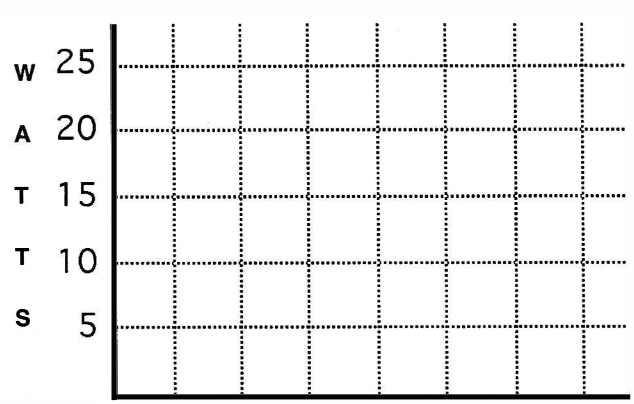
Radio ______________________ Date ______________

Owner : Name ______________________________
Address ______________________________
City ______________ St. ______ Zip ______
Phone ( ) -

Description	Before		After	
Power out (Low)	________	Watts	________	Watts
Power out (High)	________	Watts	________	Watts
Frequency Error (Simplex)	________	Hz	________	Hz
Frequency Error (Offset)	________	Hz	________	Hz
Receive Sensitivity (Mid-band)	________	uv	________	uv
Receive Sensitivity (____MHz)	________	uv	________	uv
Receive Sensitivity (____MHz)	________	uv	________	uv
PL Deviation	________	Hz	________	Hz
DTMF Deviation	________	KHz	________	KHz
Audio Deviation	________	KHz	________	KHz
Lowest usable Freq @ .5 Pwr	________	MHz	________	MHz
Highest usable Freq @ .5 Pwr	________	MHz	________	MHz



Frequency

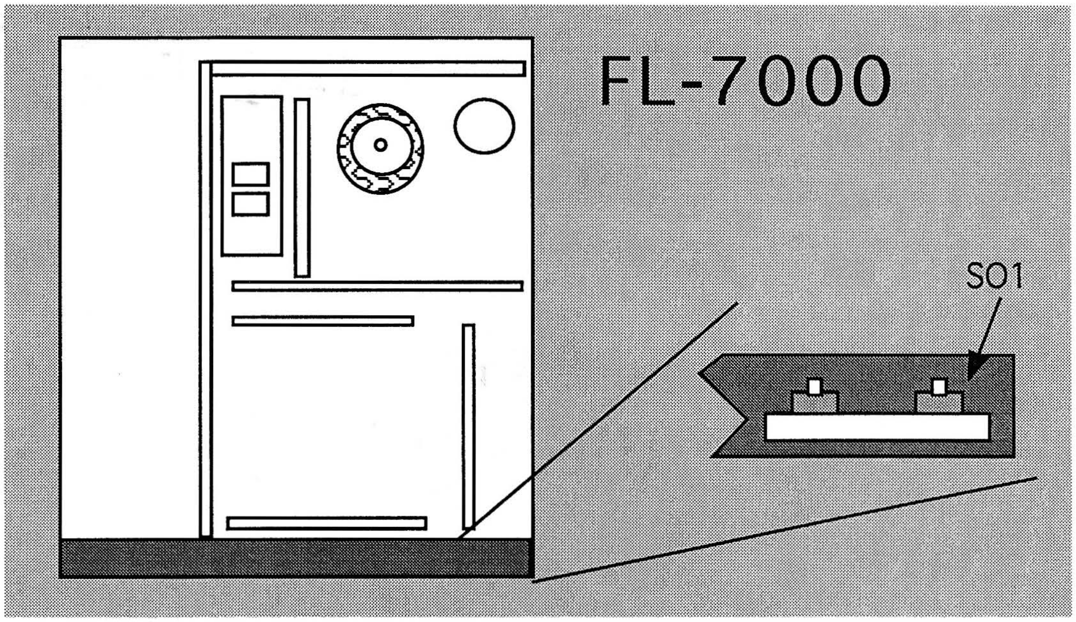


Frequency

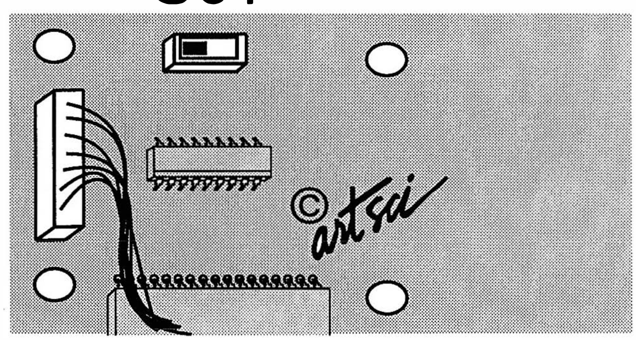
Receive and Transmit Expansion

FL-7000

Expansion Range
24.5 HMz & 28 MHz



S01



Expanded RF Modification

1. Remove Power cable and all other cables.
2. Remove 4 screws from the top cover.
3. Remove the top cover and the right and left panels.
4. Remove 4 screws from the power combiner unit and remove screen plate.
5. **Locate Switch SO1 on the CPU unit and set it to the off position.** (A small screwdriver can be used to reach the switch.)
6. Reassemble the unit.

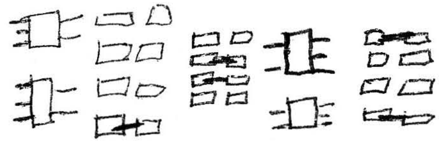
(818) 843-4080 12-4 PST, Fax:(818) 846-2298

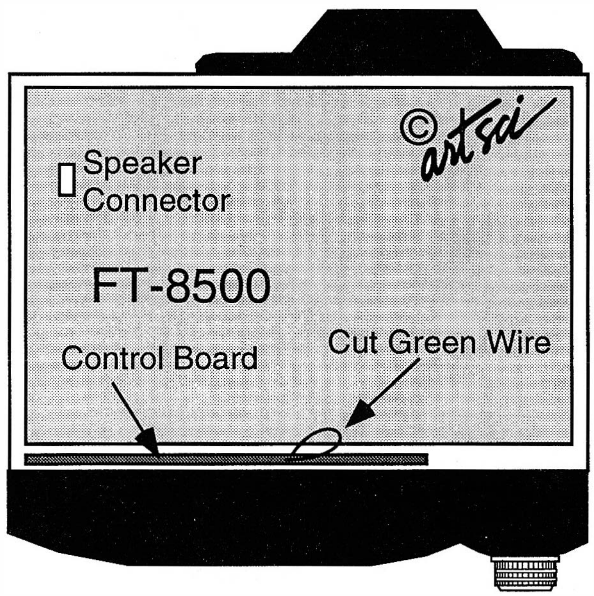
Receive and Transmit Expansion

Expansion Range

137 MHz - 174 MHz
410 MHz - 470 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.





Expanded RF Modification

1. Disconnect power and antenna.
2. Remove screws from covers.
3. Gently tilt up the top cover and unplug the speaker.
4. Locate and **cut the Green wire** on the control board (it is a vertical board)
5. Reassemble the radio.
6. **Reset the microprocessor**
   (Press and hold [D/M] & [REV] & [ENT] & turn power on.
   (Turn off again)
   (Press and hold [SCAN] & [HOME] & turn on. - Exp RX mod)

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

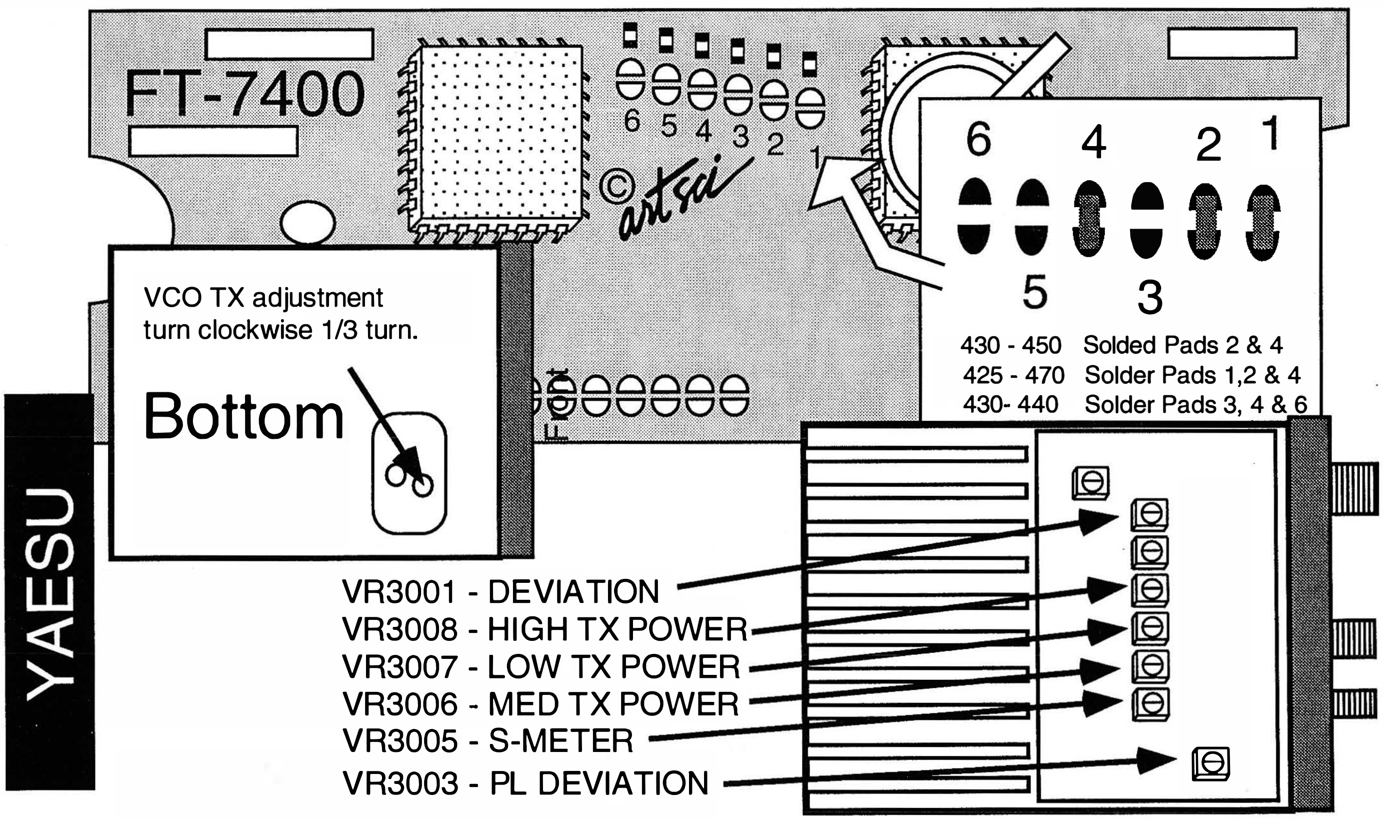
Expansion Range

420 - 470 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Expanded RF Modification

1. Remove power from the radio.
2. Remove Front Panel.
3. Locate solder pad #1. (Behind front control panel)
4. **Solder jump pad # 1**
5. Reassemble the radio.



Receive and Transmit Expansion

Expansion Range

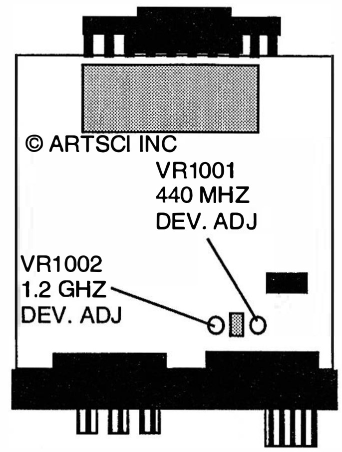
420 - 475 Mhz.

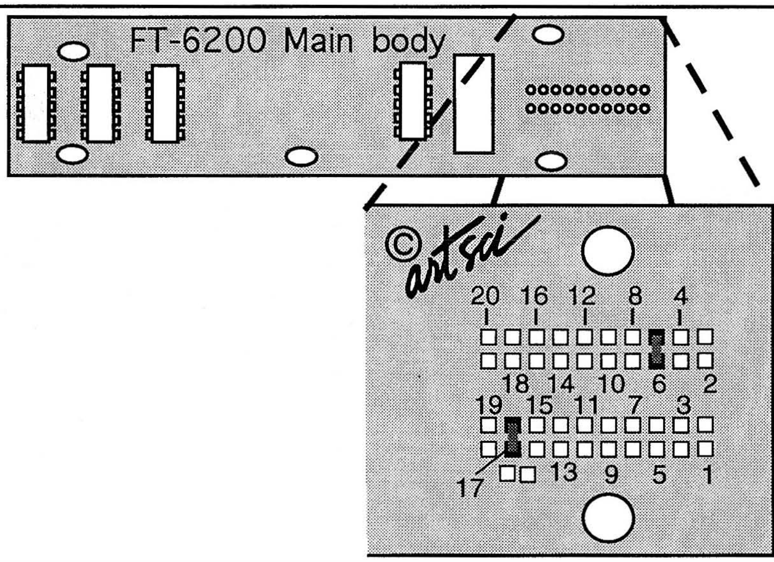
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

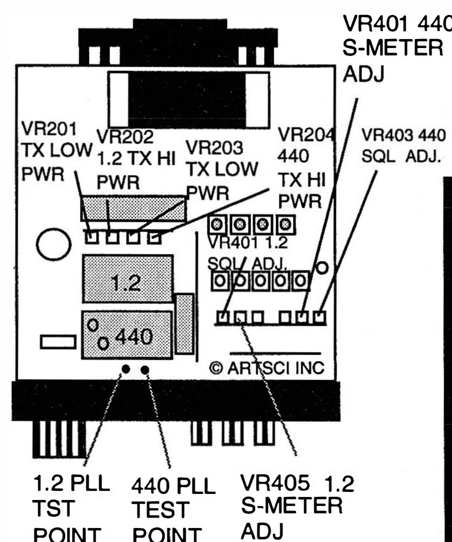
Expanded RF Modification

1. Remove power from the radio.
2. Release and remove the Control head.
3. Remove the top and bottom covers. Six screws hold the top and bottom covers on.
4. Remove the two silver screws holding the control head mounting bracket.
5. Remove the mounting bracket.
6. **Locate and solder jumper pad #6.**
   Pads 2, 4, 6, 7, 8, 15, 17 & 18 will now be jumpered.
7. **Locate and remove solder jumper pad #17.** (X-Band repeater mod)
   Caution: Make sure you jumper the proper pad. see drawing below.
8. Reassemble the radio.
9. Reconnect the power.
10. **Press and hold [D/MR], [F/W] & [REV] and turn the power on.**
    The radio will now show 300.000
11. **Enter the following band limits:**

    420.00 and then press [D/MR] (UHF Rx low limit)
    475.00 and then press [D/MR] (UHF Rx high limit)
    420.00 and then press [D/MR] (UHF Tx low limit)
    475.00 and then press [D/MR] (UHF Tx high limit)
12. Press [FUNCTION] and then [RPT] and select 5.000 MHz repeater offset.







To activate X-Band repeater function:	Press and hold [RPT] and tum power on.
To override automatic display dimmer:	Press and hold [MR] and tum power on and select the desired brightness level)

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

OTHER CB's
CONTINUED

COMPANY	MODEL	REMOVE THIS PART
MIDLAND	76-858	RV-2
	76-860	R-218
	76-863	RV-2
	77-101B	RV-201
	77-101C	RV-201
	77-116	RV-2
	77-821	RV-2
	77-824	RV-201
	77-825	D-3
	77-830	RV-2
	77-838	RV-2
	77-849	RV-2
	77-856	VR-5
	77-857	RV-2
	77-861	D-2
	77-866	TR-8
	77-867	D-14
	77-874	X-11
	77-882	Q-15
	77-883	X-11
	77-888	RV-2
	77-889	RV-2
	77-963	RV-2
	79-892	RV-12=AM & RV-11=SSB
	79-893	RT-601=AM & RV-7=SSB
MOPAR	4094177	RV-2
	4094178	RV-2

OTHER CB's
CONTINUED

COMPANY	MODEL	REMOVE THIS PART
PACE	CB-145	CV-20
	CB-166	R-207
	1000-MS	CR-508
	2300	X-9
	CB-8008	R-218
	CB-8010	R-220
	CB-8015	R-220
	CB-8041	R-302
	CB-8046	R-302
	CB-8117	R-220
	CB-8117	R-220
PALOMAR	49	R-208
	SSB-500	RV-12=AM & RV-2=SSB
	4100	RV-2
PANASONIC	RJ-3150	R-117
	RJ-3250	R-70
PEARCE SIMPSON	JAGUAR	FVR-3
	LION	RV-2
	SUPER LYNX	D-12
	TIGER	RV-2

OTHER CB's
CONTINUED

COMPANY	MODEL	REMOVE THIS PART
PRESIDENT	ADAMS (OLD)	VR-7=AM & CT-7=SSB
	ADAMS (NEW)	TR-24
	AR-7	R-54
	AX-43	Q-12
	DWIGHT D	VR-6
	GRANT (OLD)	VR-7=AM & CT-7=SSB
	GRANT (NEW)	R-128=AM & VR-11=SSB
	HONEST ABE	VR-5
	JOHN Q	RT-4
	MADISON (OLD)	VR-7=AB & CT-7=SSB
	MADISON (NEW)	R-128
	MCKINLEY	R-120
	OLD HICKORY	VR-5
	TEDDY R	VR-5
	THOMAS J	VR-4
	WASHINGTON (OLD)	VR-7=AM & CT-7=SSB
	WASHINGTON (NEW)	TR-32
	ZACHARY T	VR-6
RAIDER	404-R	D-52
RANGER	AR-3300	VR-17=AM & VR-15=SSB
	AR-3500	VR-17=AM & VR-15=SSB
RCA	14T260	RV-2
	14T270	RV-2
	14T301	RV-2
	14T302	D-301
	14T303	RV-2
	14T304	RV-2
	14T305	RV-2

OTHER CB's
CONTINUED

COMPANY	MODEL	REMOVE THIS PART
RCI	2900	VR-14=AM & VR-12=SSB
	2950	VR-14=AM & VR-12=SSB
REGENCY	CR-186	D-9
ROBYN	AM-500D	VR-5
	DG-130D	VR-6
	GT-410	VR-13
	LB-120	VR-6
	SX-401	RV-7
	SX-402D	VR-13
	T240D	VR-4
	WV-110	VR-6
	007-140	VR-6
	123-C	D-11
	510-D	VR-7=AM & CT-7=SSB

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

OTHER CB's
CONTINUED

COMPANY	MODEL	REMOVE THIS PART
ROYCE	1-602	D-6
	1-603	Q-205
	1-606	D-17
	1-607	VR-201
	1-609	Q-205
	1-610	D-202
	1-619	D-301
	1-620	D-301
	1-621	VR-3
	1-625	VR-1602
	1-630	C-79 & D-42 & D-44
	1-639	Q-16
	1-641	VR-7
	1-648	C-82 & C-35 & C-96
	1-653D	D-301
	1-655	D-301
	1-658	D-301
	1-662	D-301
	1-673	D-301
	1-675	D-301
	1-680	D-301
	1-682	D-301
SANYO	TA-2000	D-505
	TA-4000	VR-6

OTHER CB's

CONTINUED

COMPANY	MODEL	REMOVE THIS PART
SBE	ASPEN-41	VR-203
	CONSOLE II	VR-7=AM & VR-1=SSB
	CONSOLE V	VR-803=AM & VR-302=SSB
	CORTEX	VR-203
	FORMULA D	VR-9
	KEYCOM 54	RV-1
	LCB-8	VR-6
	LCMS-5	VR-6
	MALIBU 44	R-226
	TAHOE 49	R-129
	TOUCH COM 174	VR-4
	TRINIDAD 45	R-226
SEARS	370.380507	R-218
	934.36710501	D-6
	934.380607	D-7
	934.380627	R-42
	934.380807	D-7
	934.380817	D-501
	934.381107	D-501
	934.381207	D-502
SILTRONICS	APACHE	D-14
	MOHAWK	D-14
SHARP	CB-750	R-112
	CB-2260	R-112

OTHER CB's
CONTINUED

COMPANY	MODEL	REMOVE THIS PART
SUPERSTAR	120	D-11
	360 FM	VR-14=AM & VR-12=SSB
	3600	VR-14=AM & VR-12=SSB
TEABERRY	RACER T	VR-6
	STALKER I	VR-13=AM & VR-12=SSB
	STALKER II	VR-13=AM & VR-12=SSB
	STALKER V	VR-4
	STALKER IX	R-102
	T BEAR	VR-5
	T CHARLIE	VR-7
	T COMMAND	VR-5
	TITAN T	D-14
	T CONTROL	VR-505
TENNA PHASE	CB-22	R-46
	CB-26	D-22
TRAM	D-12	R-61
	D-42	CD-11
	D-60	R-98=AM & R-112 SSB
	D-201A	VR-77
	D-300	TR-23
TRUETONE	CYJ4862A-87	RV-2
	8334	Q-15

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

OTHER CB's
CONTINUED

COMPANY	MODEL	REMOVE THIS PART
UNIDEN	2510	VR-112=AM & VR-104=SSB
	2600	VR-112=AM & VR-104=SSB
	PC-3	TR-14
	PRO-640	RV-5=AM & VR-6=SSB
	PC-122	Q-29 (near PL connector)
UTAC	TRX-400	D-11
VECTOR	770	FVR-3
	790	FVR-3
WARDS	GEN-730A	VR-206
	GEN-775A	VR-206
	GEN-828A	VR-206
WHISTLER	700	Q-205
	900	Q-305
XTAL	CB-7	D-18
	CB-11	D-14
	SSB-10	D-2
ZEXON	49	Q-201

(818) 843-4080 12-4 PST, Fax:(818) 846-2298

COAX CABLE LOSS

COAX TYPE	VEL %	dB ATTENUATION PER 100 FEET. 100 MHz	200 Mhz	400 MHz	1000 MHz	LENGTH IN FEET FOR 1 WAVELENGHT 146 MHz	222 MHz	445 MHz
9913 (100% shield)	89	1.4	1.8	2.6	4.5	6.00	3.94	1.97
RG-8U FOAM (8214)	80	1.8	2.7	4.2	7.0	5.39	3.55	1.77
RG-213 (NON-CONTAM.)	66	2.2	3.2	4.7	8.5	4.45	2.93	1.46
RG-8X (MINI-FOAM)	78	3.7	5.4	8.0	13.5	5.26	3.46	1.72
9311 (100% SHIELD 58U)	78	4.5	6.3	9.0	14.5	5.26	3.46	1.72
RG-58U (SOLID CENTER)	66	4.5	6.7	10.0	17.0	4.45	2.93	1.46
RG-58A/U (STRANDED CTR)	66	4.9	7.5	11.5	21.5	4.45	2.93	1.46

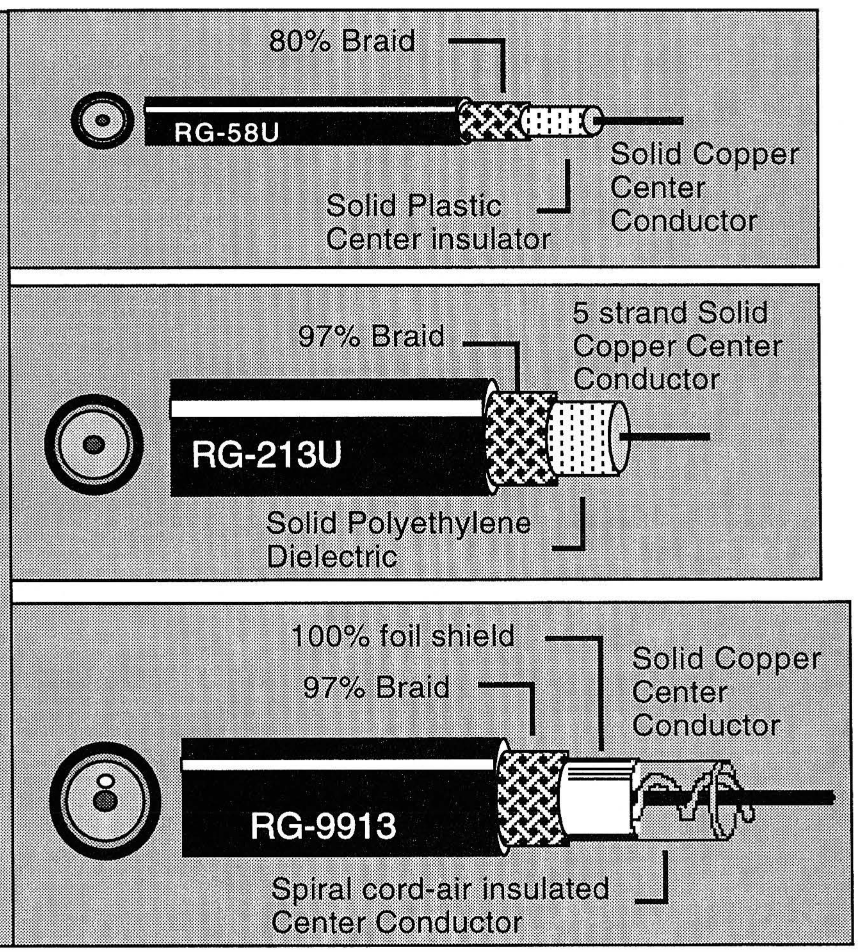
COAX LENGTHS SHOULD BE MULTIPLE HALF WAVELENGHTS.

$$\frac{984}{\text{FREQ. IN MHZ}} \times \text{VEL \%} = \text{ONE WAVE LENGHT IN FEET.}$$

db to % loss chart

db Loss	Power Loss
0.2	4 %
0.4	8 %
0.6	13 %
0.8	17 %
1.0	21 %
1.2	24 %
1.4	27 %
1.6	30 %
1.8	33 %
2.0	37 %
2.2	39 %
2.4	42 %
2.6	45 %
2.8	47 %
3.0	50 %
3.2	52 %
3.4	54 %
3.6	56 %
3.8	58 %
4.0	60 %
4.2	62 %
4.4	63 %
4.6	65 %
4.8	67 %
5.0	68 %
5.2	70 %
5.4	71 %
5.6	73 %
5.8	74 %

Popular Coax Cables

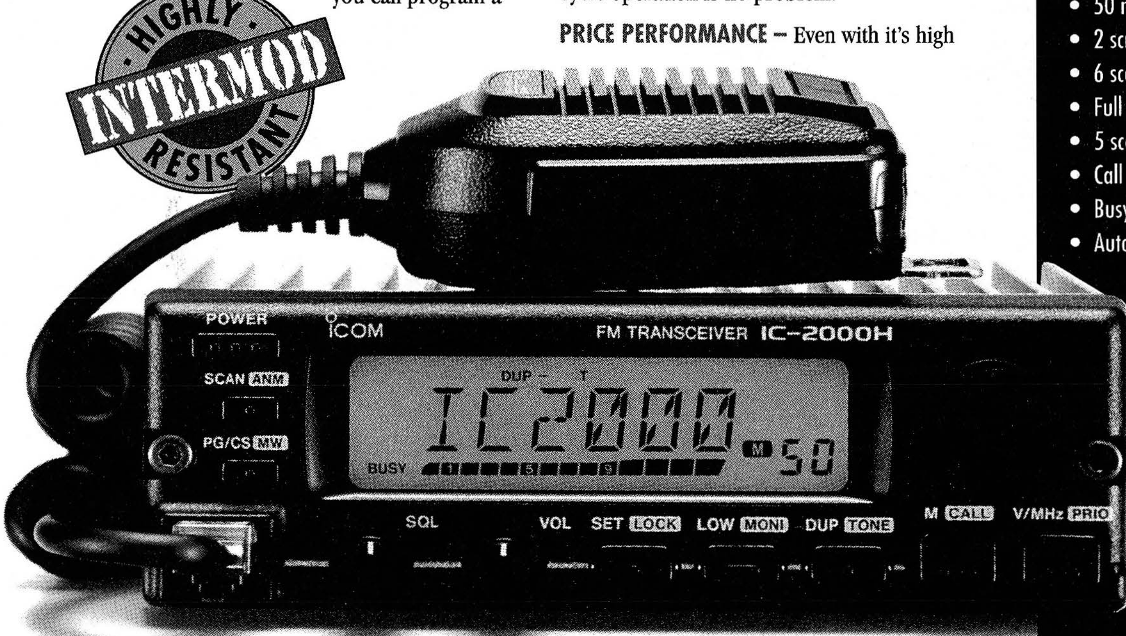


ICOM'S NEW IC-2000H

LEADS THE WAY TO CLEAR, CRISP RECEPTION! – Mobile radios (of all manufacturers) have recently experienced increasing problems from cross modulation interference. This has been caused by the increasing quantity of RF devices (i.e.: mobile radios, paging systems, cell phones, cordless phones, etc...) Commonly known as "intermod", this interference can make a mobile radio unuseable at certain frequencies, depending on local area conditions.

SUPERIOR WIDEBAND RECEIVER CHARACTERISTICS – ICOM's IC-2000H has been specifically designed to deal with this growing problem. A tracking tuning system and high quality RF band pass filters are employed to improve image rejection and intermodulation characteristics. Now you can pursue your hobby in areas previously not possible due to interference. Plus, you're less likely than ever to miss an important call!

ALPHANUMERIC DISPLAY – With the IC-2000H you can program a 6 character name for each memory channel. With the name displayed instead of the frequency you'll have instant ID of memory channels, less confusion and mistakes, and a logical and convenient memory management system.



50 WATT OUTPUT – Work distant repeaters with the IC-2000H. The full 50 watts of output power gives you enough muscle to work most applications. And when you don't need as much power, such as when working a close station, you may choose a 5 or 10 watt output power setting.

"ONE-PIECE" CONSTRUCTION – ICOM gave the IC-2000H a rugged "one-piece" die cast aluminum frame and our largest heat sink ever. Now you'll get dependable, stable transmissions in extreme environments. Plus, any heavy duty cycle operation is no problem.

PRICE PERFORMANCE – Even with it's high quality construction, great features and exceptional performance, the IC-2000H is one of the most economical 2 meter FM mobiles around. You'll get real value for your money.

FOR MORE INFO CALL ICOM'S FREE BROCHURE HOTLINE: (206) 450-6088

NEW! IC-2000H

• FEATURES •

- 50 W of power (50, 10, 5 selectable)
- Rx 118-174 MHz (118-136 AM, 136.1-174 FM)
- Tx 140-150 MHz (for MARS/CAP)
- AM aircraft receive

superior WIDE BAND reception

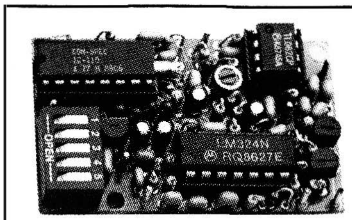
- Alphanumeric display
- Message paging
- 50 memory channels
- 2 scratch pad memories
- 6 scan edge memories
- Full scan + program scan
- 5 scan resume conditions
- Call channel
- Busy channel lockout
- Auto power off
- Scan modes and priority watch
- Programmable up switch
- DTMF mic included
- "One touch" button operation
- Separate volume and squelch knobs
- Alpha message paging (UT-55 required)
- Tone scan (UT-85 required)
- Code squelch/pager (UT-101 required)
- Tone squelch/pocket beep (UT-85 required)

ICOM®
Experience the Quality™

ICOM America, Inc. 2380 116th Avenue N.E., Bellevue, WA 98004 U.S.A. Customer service/technical support 206-454-7619

TS-32P DIP Switch Programmable Encoder-Decoder $57.95

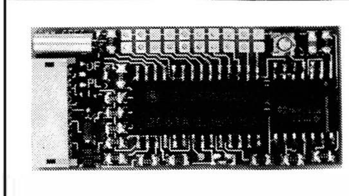
Universal design provides CTCSS capability to all FM transceivers. On-board DIP switch allows instant programming without tone elements, counters, or other test equipment. Crystal controlled for high accuracy and stability. The 32 location tone memory is complete with standard EIA tones from 67.0 to 203.5 Hz, or may be ordered with ANY 32 custom tone frequencies between 0 - 250.0 Hz (±0.1 Hz) at no extra charge. Multiple tone switching is easily done with your radio's channel select switch or separate single pole switch. A high pass tone rejection filter is included on board to remove tone from received audio. Reverse polarity protection and RF immunity are built in. Powered by 6 - 24 vdc, unregulated at 8ma. Supplied with color-coded wires terminated to plug directly onto the TS-32P. Mounting materials include hardware and double sided, insulated tape.



Programmable Encoder-Decoder
1.25"x2.0"x0.40"

TS-64 Microminiature CTCSS Encoder-Decoder $64.95

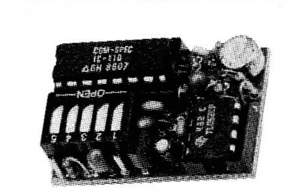
The latest - and smallest - programmable CTCSS encoder-decoder for use in FM transceivers. Ideal for many handheld radios and others with limited space. Select from 64 preset CTCSS tones between 33.0 Hz and 254.1 Hz using six PCB jumpers. Tone stability is crystal controlled with accuracy better than 0.05 Hz. Output level can be adjusted from OV to 3.0V. A time-out-timer feature permits programming transmit duration to eight different intervals decreasing "stuck mic" problems. Receiver Hi-pass filter and busy channel lockout are included. Decode sensitivity is 15mv. Power can be from 6.0vdc to 20.0vdc @ 9ma. Operating temperature range is from −30ºC to +65ºC. When P.T.T. switch is released, the TS-64 continues to key transmitter for 160ms. During this time, the TS-64 generates a reverse phase burst which will mute the decoding unit at the other end. A microminiature plug and socket with color coded wires attached is provided for hookup. Comes with double sided tape for quick mounting.



Microminiature CTCSS Encoder-Decoder
.78"x 1.70"x .25"

SS-32PA DIP Switch Programmable CTCSS Encoder $28.95

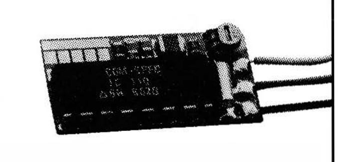
Universal design provides CTCSS encode capability to all FM transceivers. On-board DIP switch allows instant programming without tone elements, counters, or other test equipment. Crystal controlled for high accuracy and stability. The standard 32 tone memory contains the EIA tones from 67.0 to 203.5 Hz (or may be ordered with ANY 32 custom tone frequencies between 0 - 250.0 Hz at no extra charge). Multiple tone switching is easily achieved with your radio's channel select switch or a separate single pole switch.



SS-32PA / SS-32PB Encoder
0.9"x 1.3"x0.4"

SS-32SMP Micro-Miniature CTCSS Encoder $27.95

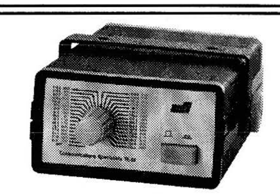
Super small programmable CTCSS encoder for use in handheld radios and other size restricted applications. Has the same basic features as the SS-32PA (see above), but does not include the on-board DIP switch due to size limitations. Programming is done by soldering binary coded jumpers on the tone board.



SS-32SMP / SS-32SMP-B Encoder
0.53"x 1.00"x0.16"

TE-64 Multi-purpose CTCSS/Burst Tone Encoder $79.95

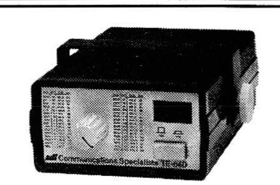
Fully enclosed encoder provides, from a front dial rotary switch, all EIA CTCSS tones from 67.0 to 203.5 Hz PLUS all the common burst tones from 1600 to 2550 in 50 Hz increments. All available tone frequencies are permanently screened onto the faceplate, and selected with a calibrated dial. Great for test bench or service vehicle applications. Operates on 6-30 vdc, and all connections are made to a terminal strip at the rear of the unit. A 9 volt battery plug and cable is included, and may be attached at the terminal strip or soldered directly to the circuit board for field operation. Packaged in a high impact plastic case, with mounting bracket and hardware supplied.



TE-64 Tone Encoder
5.25"x3.3"x 1.7"

TE-64D Multi-purpose CTCSS/Burst Tone Encoder w/Display $129.90

An enhanced version of the TE-64 encoder (see above). Features a two-digit LED which displays a number from 01 to 32 that in turn corresponds with the CTCSS or burst frequency selected by the front panel rotary switch. The two-digit number displayed is cross-referenced to the tone frequency on a chart located on the faceplate. Perfect for mobile applications, night-time operations, or whenever high visibility read-out is desired. Operates on 6-16 vdc (current draw does not allow operation from 9 volt battery).



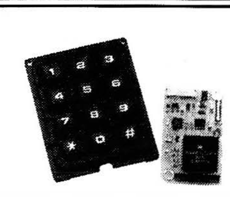
TE-64D Tone Encoder w/Display
5.25"x3.3"x 1.7"

NEW!

ID-8 Automatic Morse Station Identifier $89.95

Provides automatic Morse station identification for commercial, public safety, and amateur radio applications, including repeaters, base stations, mobiles, beacons, CW memory keyers, etc. Meets all FCC identification requirements. Low voltage/current operation and small size make it universally applicable. Low distortion, low impedance, adjustable sinewave output. High accuracy crystal control. All functions are programmable with plug-on keypad, included with each unit. Programmable options include: Eight selectable messages; CW speed 1-99 seconds; interval timer 1-99 minutes; hold off timer 0-99 seconds; CW tone frequency 100-3000 Hz; front porch delay interval 0-9.9 seconds; CW or MCW; etc. All programming is stored in a non-volatile EEPROM, which may be altered at any time via the included keypad. Supplied with programming keypad, wire set with microminiature plug for easy installation or removal, both hardware and tape mounting materials, and easy to follow instructions.

NEW!



ID-8 Automatic Morse Code Identifier
1.85"x 1.12"x0.35"

COMMUNICATIONS SPECIALISTS, INC.
426 WEST TAFT AVENUE • ORANGE, CA 92665-4296
(714) 998-3021 • FAX (714) 974-3420
Entire U.S.A. (800) 854-0547 • FAX (800) 424-3420

ADI Your *affordable* Choice For 1996!

AT-200 VHF & AT-400 UHF Handheld Tranceivers



Low, Low Price !

Full 1 year warranty

AT - 200/AT - 200 HP :

- 0.35/2.5W/5W with 7.2/12.0 V Battery
- Tx/Rx 144 -148 MHz
- Rx expands 130 - 174 MHz by keypad control
- 20 Non-Volatile Memories
- 16 Digit DTMF Tone Pad With Monitor
- CTCSS Encode/Decode Included
- Programmable Non-standard Shifts
- Keypad Lock
- Automatic Power Off; Battery Save
- Coded Squelch Control
- Pause, Busy, Memory Scan, VFO Scan
- 6 Channel Steps
- Dual Frequency Watch
- Backlit LCD Display and DTMF Pad
- Small size: Only 2 inches at Hand Hold
- One Touch Open Squelch
- Call Frequency Button
- Individual & Group Paging

AT - 400/AT - 400HP :

- Tx/Rx430 - 450 mHz
- Rx expands to 400 - 480 MHz

NEW

AR-146 & AR-446 Mobile Tranceivers



AR - 146 : 144 - 148 MHz

- RX expands 125 - 174 MHz
- Power: VHF: 50/10/5W
- 40 Memory Channels/Call Channel/Channel Number Display
- Multi Function DTMF Microphone
- CTCSS Encode/Decode (included)
- Memory/Band Scan
- Carrier or Timer Scan Stop
- Auto Power Off
- Dual Frequency Watch
- 4 Step Display Dimmer
- Frequency Lock
- 16 Digit DTMF Decode and Display
- Dual Tone Squelch System Paging
- Time Out Timer (Adjustable)
- Selectable Frequency Steps
- S - Meter Squelch

Low, Low Price !

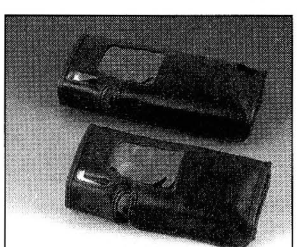
Full 1 year warranty

AR - 446 : 430 - 450 MHz

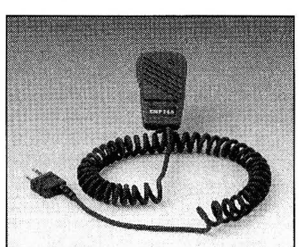
- RX expands 425 - 475 MHz
- Power Output: 35/10/5W



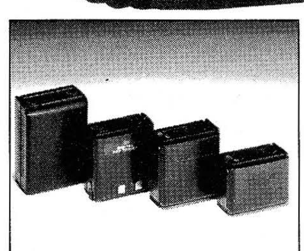
ARC - 12
SMART CHARGER



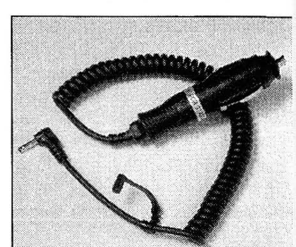
SLC - 200S /200L
LEATHER CASE



CMP - 145
SPEAKER MICROPHONE



OPTIONAL
BATTERIES PACKS

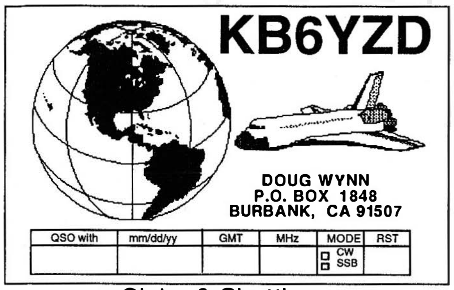


PCA - 145
CAR CABLE

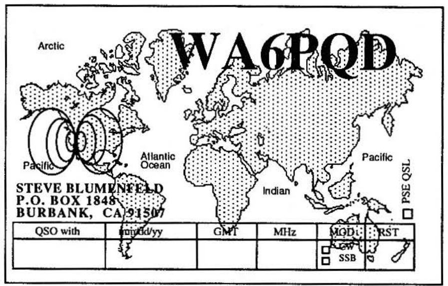
ADI radios by
PREMIER
communications®

For more information on these handheld and mobile radios, call or
write us at Premier Communications : 20277 Valley Bl., Suite J, Walnut, CA 91789
Tel: (909) 869-5709 Fax: (909) 869-5710

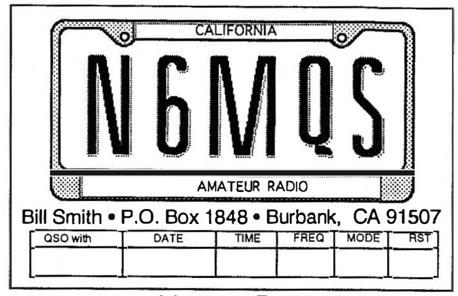
QSL Card Order Form



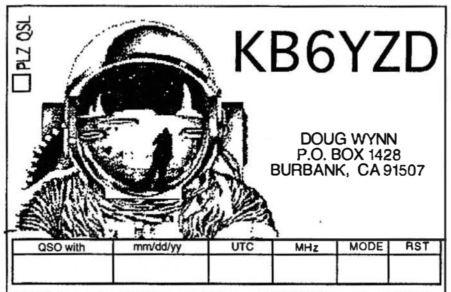
Globe & Shuttle



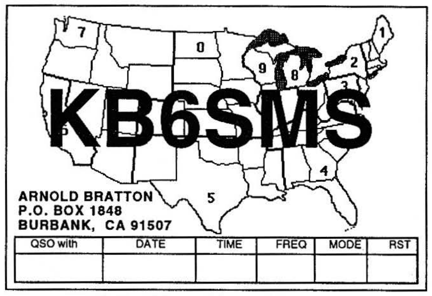
World Map



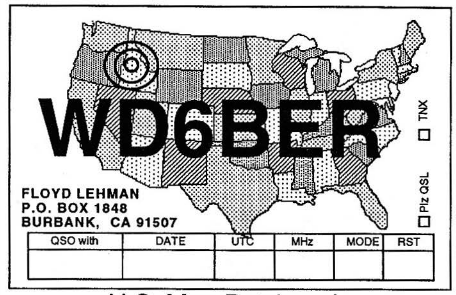
License Plate



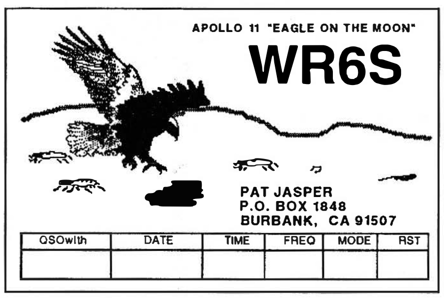
Astronaut



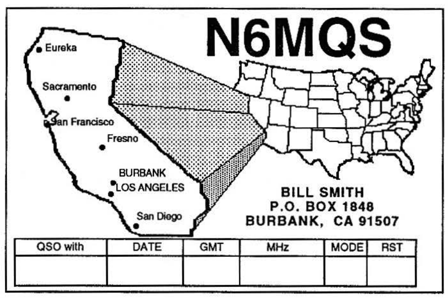
U.S. Map Ham Zones



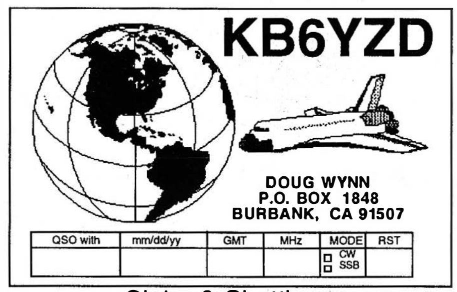
U.S. Map Patchwork



Eagle on the moon



California/U.S. (CAL ONLY)



Globe & Shuttle

QSL CARD ORDER FORM

Call Sign ____________________

Name ____________________

Address ____________________

City, State Zip ____________________

Phone # (____) ______-________

☐ Put Phone # on QSL Card

☐ Put Phone # on Eyeball (small) Card

QSL ORDER FORM

QSL Card Style (Choose one)

- ☐ U.S. Map Patchwork
- ☐ U.S. Map Ham Zones
- ☐ World Map dots
- ☐ World Map
- ☐ California/U.S.
- ☐ License Plate
- ☐ Astronaut
- ☐ Eagle on the moon
- ☐ Globe & Shuttle

All QSL cards are printed on five colors of card stock. This gives you 20 cards in each color.

Delivery will be about 2-3 weeks.

SELECT desired QSL style.

Mail the form and Payment to the address below. 73s

☐ First 100	$ 9.95	______
☐ Additional 100's	$ 6.95	______
☐ 100 Business card size	$ 8.95	______
☐ Package of QSL Holders	$ 4.99	______

Mail this form and payment to:

Kamko (818) 843-4080
P.O. Box 1428
Burbank, CA 91507

Total	______
TAX 8.25%	______
Shipping	$ 4.00
Total Due	______

Books from artsci

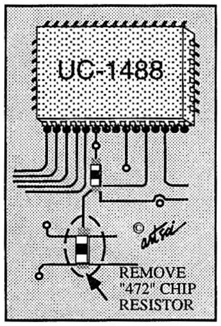
RADIO REFERENCE

RADIO/TECH MODIFICATIONS # 8A

ICOM, KENWOOD, UNIDEN/BEARCAT and RADIO SHACK

If you have even wondered how to enhance your Amateur radio, scanner or CB, then heres a book for you. Detailed picture drawings and steps by step instructions will guide you through the modifications.

Modifications include extended transmit and receive frequency coverage, cross band (repeater) operation and increased memory channels (different radios have different modification features). Alignment control drawings are presented with most modifications.



Some modifications are very simple to perform, others require experience with soldering and unsoldering. If additional parts are required, the part number and source is given.

This two volume set contains every modification known. There is no need to purchase older volumes, every new volume contains all the old modifications along with data on the new radios.

Volume 7A contains over 200 pages packed full of information about **KENWOOD** and **ICOM** radios and **Uniden/Bearcat** and **Radio Shack** Scanners.

$ 19.95

RADIO/TECH MODIFICATIONS # 8B

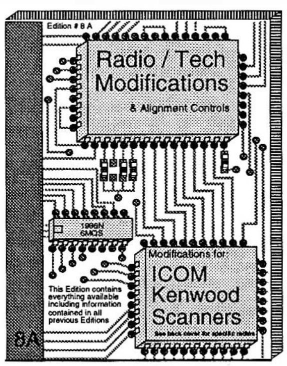
ALINCO, YAESU, STANDARD, AZDEN radios and 10M & CB radios.

Modifications include extended transmit and receive frequency coverage, cross band (repeater) operation and increased memory channels (different radios have different modification features). Alignment control drawings are presented with most modifications.

There is no need to purchase older volumes, every new volume contains all the old modifications along with data on the new radios.

Volume 7B contains over 200 pages packed full of information about **ALINCO** and **YEASU** radios and **STANDARD, AZDEN** and **10 METER & CB's**.

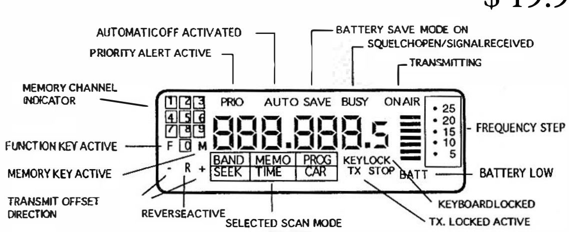
$ 19.95



LOST USER MANUALS

Lost the manual for your HT or Mobile rig? Did you purchase a used radio and it did not come with a manual? Do you have the manual but still can't work the radio quickly?
"LOST USERS MANUALS" contains **operating instructions** for all the popular amateur radios and scanners. **ICOM, Yaesu, Kenwood, Alinco, Standard, Uniden** and other manufacturers' radios. Each radio is given 2 to 5 pages of drawings, charts and programming instructions. Over 200 Pages. **2nd Edition**

$ 19.95



SCANNER REFERENCE

FEDERAL ASSIGNMENTS Vol 4

Ever wonder what the government was up to? Think the D.E.A. is in your neighborhood, possibly checking out your neighbors? Tune in with your scanner and find out!!

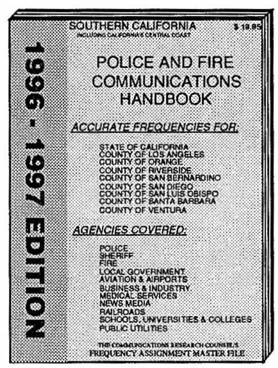
The Frequency assignment master file has complete listings of all U.S. government frequencies listed by agency and in frequency order. Includes Departments of: Agriculture, Air Force, Army, Commerce, Defence, Energy, Health and Human Services, Housing and Urban Development, Interior, Justice, Labor, Navy, State, Treasury, Transportation and 29 Independent agencies & Commissions.

This fourth edition has over 5,000 new entries and over 300 pages. You'll be amazed at what is going on in your neighborhood!! Listen in and find out.

$ 24.95

POLICE AND FIRE COMMUNICATIONS HANDBOOK

The search for what's happening in **Southern California** has been an ongoing affair since police and other government agencies using radios for their communications. The improvement in scanner hardware and antennas has been fantastic. Unfortunately, the available frequency books have not kept pace with the times.



by
The Communications Research Counsel

" This is a book that should be on the desk of every radio operator in government or emergency service. "

First there was "Police Call", then others have come and gone and have the same problem, inaccurate and outdated information.

Now comes the newest book from the Communications Research Counsel, "Police and Fire Communications Handbook". Not only is this book accurate and timely, but it is organized in a format that is easy to use. Even the back cover presents a "CITY INDEX QUICK FINDER."

For those who want all the information available, the PL (private line) subaudible squelch tone code are also listed!! Maps of radio sites and all LAPD reporting districts are included in the back of the book. 356 pages. 6" x 9".

$ 19.95

SHORTWAVE REFERENCE

NORTH AMERICAN SHORTWAVE FREQUENCY GUIDE

If you are interested in Shortwave, this **third edition** book will help bring the world closer. New in this edition are **world frequency maps** to help you tune into a specific country, anywhere in the world. The new quick country quide will help you tune in almost any time of the day or night.

Accurate and complete listings of **all English and Spanish broadcasts** on the 0 - 30 MHz shortwave bands that can be heard in North America. Listing are presented in frequency order. Over 200 pages.

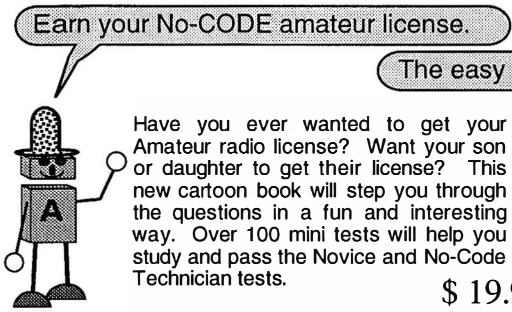
$ 19.95

(818) 843-4080
(818) 846-2298 Fax

Books from artsci

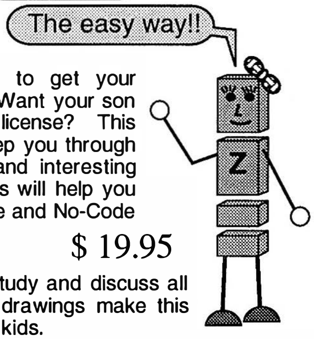
AMATEUR REFERENCE

RIDING THE AIRWAVES WITH ALPHA & ZULU



Have you ever wanted to get your Amateur radio license? Want your son or daughter to get their license? This new cartoon book will step you through the questions in a fun and interesting way. Over 100 mini tests will help you study and pass the Novice and No-Code Technician tests.

$ 19.95

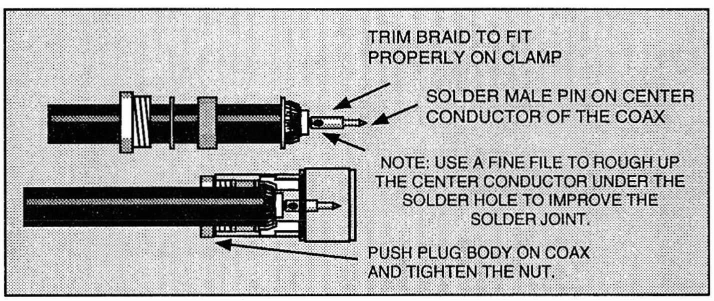


You'll meet the Phoneticos, as they study and discuss all aspects of amateur radio. Detailed drawings make this book as interesting to adults as it is for kids.

112 comic strips review all the questions and answers in 288 pages.

AMATEUR HANDBOOK

Why search through countless books for that one piece of information when its so easy to find in the Amateur Hambook. A true cornacopia of technical information for ham radio. Not only will you find the theoretical aspects, you will find real practical information presented in a no nonsense form.



Equipment & Log Sheets, Charts, Tables showing: worldwide callsigns, world times, shortwave listening frequencies, coax losses, CTCSS details, conversions, construction plans, emergency information, etc. This book contains all the useful information a amateur radio operator needs to reference.
133 pages.

$ 14.95

HAM RADIO RESOURCE GUIDE

For Southern California only. A booklet of all the information an amateur radio operator needs. Listings of clubs, testing centers, radio stores and surplus dealers. Maps of repeaters, store and swap meet locations. Listing of Packet repeaters, phone BBS and node lists. 64 pages 8 1/2" X 5 1/2",

$ 9.95

artsci ARTistic SCience

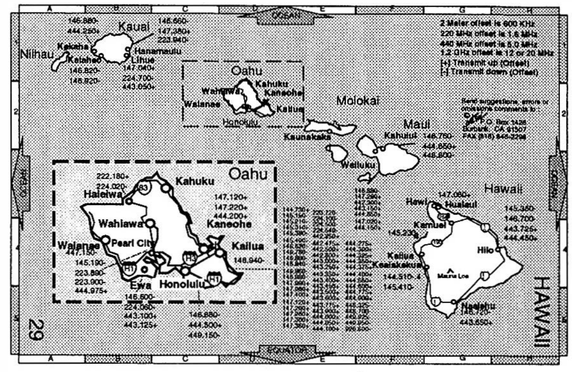
P.O. Box 1428
Burbank, CA 91507
(818) 843-4080
FAX: (818) 846-2298

Web Page - http://www.earthlink.net/~artsci
e-mail - artsci@earthlink.net

AMATEUR REFERENCE

U.S. REPEATER MAPBOOK

A PERFECT travelling companion. The Mapbook contains locations of hundreds upon hundreds of open repeaters throughout the U.S., Canada and Mexico.



These DETAILED maps show all highways and major cities in each state. If you travel anywhere in the United States, this MAPbook will be the best investment you ever made!!

NEW in this edition are table listings of every know open repeater in the state. 10,6,2 meter, 220, 440 MHz and 1.2 GHz repeaters are shown.

COLORADO OPEN REPEATERS

AKRON			
	145.400-	A	
ASPEN			
	146.670-		
	146.700-		
	147.300-		
	449.975-		
AVON			
	449.900-		
BOULDER			
	145.460-	A	
	146.610-		
	146.700-		
	146.730-		
	146.760-		
	146.745-		
	224.020-		
	224.600-	A	
	224.860-		
	447.375-	CA	
	448.175-		
	448.900-	A	
	449.400-		
	449.550-		
	449.925-		
BRIGHTON			
	224.300-		100.0
	223.980-		
	224.000-		
	224.180-		
	224.340-		
	224.640-		
	224.740-		
	224.780-		
	224.880-		
	224.980-	CA	
	447.975-		
BUENAVISTA			
	146.745-		
BURSH			
	224.460-		
CANONCITY			
	147.090+		
	147.210+		
	223.960-		
	447.750-		
CARBONDALE			
	146.760-		
CHEYEN WELLS			
	147.075+	A	
COLORADO SPR			
	145.130-		
	145.160-		
	145.265-		
	146.970-		
	147.135-		
	147.180-		
	224.060-		
	224.820-		
	224.960-		
	444.200+		
	447.250-		
	447.825-		
	448.000-		
	448.450-		
	448.500-		
	448.600-		
CRAIG			
	146.970-		
CRIPPLE CREEK			
	145.460-		
	447.400-		
DEERTRAIL			
	447.875-		
DENVER			
	145.145-	A	
	145.220-	A	
	145.250-	A	
	145.280-		
	145.310-		
DENVER			
	145.355-		
	145.385-		
	145.430-		
	145.475-	A	
	145.490-		
	146.640-	A	
	146.670-		
	146.715-		
	146.805-		
	146.880-	A	
	146.940-		
	146.985-		
	147.120+		
	147.150+	A	
	147.225+	A	
	147.255+	A	
	147.330+		
	147.375+	A	
	147.690-	A	123.0
	53.050-		
	53.090-		
	447.150-	CA	
	447.200-		
	447.400-		
	447.500-		
	447.925-		
	447.950-		
	448.125-		
	448.375-		
	448.500-		
	448.575-		100.0
	448.650-		
	448.975-		
	448.750-		
	448.850-	A	
	448.875-		
	448.925-	A	
	448.950-		100.0
	449.125-		
	449.175-		
	449.225-		
	449.250-	CA	
	449.350-		
	449.450-	CA	103.5
	449.600-		
	449.875-		103.5
	449.950-		
	449.975-		
	1287.800-		
	1287.900-		
DILLON			
	146.790-	A	
	146.790-		
DURANGO			
	146.670-	A	
	146.700-		
	449.850-		
ELLICOTT			
	146.685-		
EMPIRE			
	145.370-		
ESTES PARK			
	146.985-		
FAIRPL[illegible]	[illegible]360+	A	
FORT COLLINS			
	145.115-		100.0
	147.360+	A	100.0
	449.850-	CA	100.0
FORT LUPTON			
	224.400-		
FORTMORGAN			
	147.240+	A	
GENOA			
	146.895-		
	147.060+		
GLENWOOD SPRINGS			
	146.880-	A	107.2
	447.100-		
	449.600-		107.2
GRAND JUNCTION			
	146.790-		
	146.820-		107.2
	146.940-		
	147.285+		
	223.940-		
	224.260-		
	448.200-		118.8
	449.200-		107.2
	449.300-		107.2
GREELEY			
	147.000+	A	
	224.940-		
	448.475-		
	449.325-		
	449.475-		
	449.725-	A	
GUNNISON			
	147.120+		
HASWELL			
	447.100-		
HOLYOKE			
	146.955-		
KREMMLING			
	147.075+		
	147.285+		
LA JUNTA			
	146.700-		
LAFAYETTE			
	224.760-		
LAMAR			
	146.610-		
	147.150+		
LEADVILLE			
	145.445-		
LIVERMORE			
	146.625-		
LONGMONT			
	147.270+	A	
	448.525-		
	448.800-		
LOVELAND			
	147.195+	A	
	224.140-		
	448.025-		
	449.575-		
MEEKER			
	146.730-		
MONTROSE			
	145.145-		107.2
	146.910-		
	147.150+	A	
MONUMENT			
	223.920-	A	
	447.725-		
NORWOOD			
	146.640-		
PASOSA SPRINGS			
	146.610-	A	
PUEBLO			
	145.115-		
	146.655-		
	146.880-		
	147.000+		
	53.030-		
	224.260-		
	224.720-	A	
	447.175-		
	447.450-		
	447.950-		
	449.550-		
	449.850-		
RANGELY			
	449.950-		114.8
RIFLE			
	146.985-		
SALIDA			
	147.285+		
SPRINGFIELD			
	146.640-		
STEAMBOAT SPRINGS			
	449.650-		
	147.210+		
STERLING			
	145.175-		
	146.790-		
	448.150-		
VAIL			
	146.610-		
	448.650-		
WALSENBURG			
	146.730-		
	224.320-		
	448.550-		
WIDEFIELD			
	146.625-		
	448.725-		
WINDSOR			
	146.850-		
WINTER PARK			
	146.820-		
WOODLAND PARK			
	145.415-		
	146.820+		
	448.650-		

$ 9.95

CD-ROM CALLSIGN DATABASE & OPEN REPEATERS



Get the U.S. Repeater Mapbook and the CD-ROM for DOS, Windows and MACINTOSH.

$ 29.95

DOS
WINDOWS
MACINTOSH

— ORDER FORM —

	TITLE	DESCRIPTION	PRICE	QTY	EXTENSION
Radio Reference	Radio/Tech Modifications Edition _ A	Over 200 pages of mods for ICOM, KENWOOD Radios & Radio Shack, Uniden and Regency Scanners	19.95		
	Radio/Tech Modifications Edition _B	Over 200 pages of mods for ALINCO, YAESU, STANDARD and all models of CB equipment.	19.95		
	Lost Users Manuals	Operating Instructions for all popular amateur Mobiles & Ht's.	19.95		
Amateur Reference	U.S. Repeater Mapbook & repeater directory	VHF & UHF Repeater guide for North America with Maps showing popular repeaters and listings in city order.	9.95		
	CD-ROM Mapbook Call Sign Database	U.S. Repeater Mapbook with CD-ROM- Includes Amateur radio call sign database.	29.95		
	Amateur HamBook #2	Construction plans, coax, antenna, connector, SWR charts. A must have.	14.95		
	Simpleton's Ham Dictionary	Definitions and drawing for all those amateur radio terms.	9.95		
	Ham Radio Resource Guide	For Southern California only. Testing, Club, Repeater, maps & more	9.95		
Scanner Reference	Federal Assignments Volume #5	Scanner Frequency guide for all Federal Government Agencies. Over 300 pages	24.95		
	Police & Fire Communications Handbook	For Southern & Central California Scanner Listners. Best available freq. List !!	19.95		
Short-wave	North American Shortwave Directory	Complete Listing of all activity on the HF band 0-30 MHz. Maps and more.	19.95		
LicenseStudy Guides	Riding the airwaves with Alpha & Zulu	Novice & No-code license test book using cartoon strips to teach. for ages 8 - 80 !!!	19.95		
	No-Code Tech Spanish & English Study Guide	License manual with all questions in English and Spanish. Great help learning another language.	19.95		
	General Class Spanish & English Study Guide	License manual with all questions in English and Spanish. Great help learning another language.	19.95		

Form RTM 8A

MAIL ORDER FORM TO:

ARTSCI INC.
P.O. BOX 1428
BURBANK, CA 91507
(818) 843-4080
FAX: (818) 846-2298

Shipping charge outside the U.S. is $10.00 or more

SUBTOTAL	
SALES TAX 8.25% CA	
SHIPPING	$ 4.00
ORDER TOTAL	

artsci

SHIP TO:

NAME

ADDRESS

CITY ST ZIP

PHONE ( )

BILLING INFORMATION

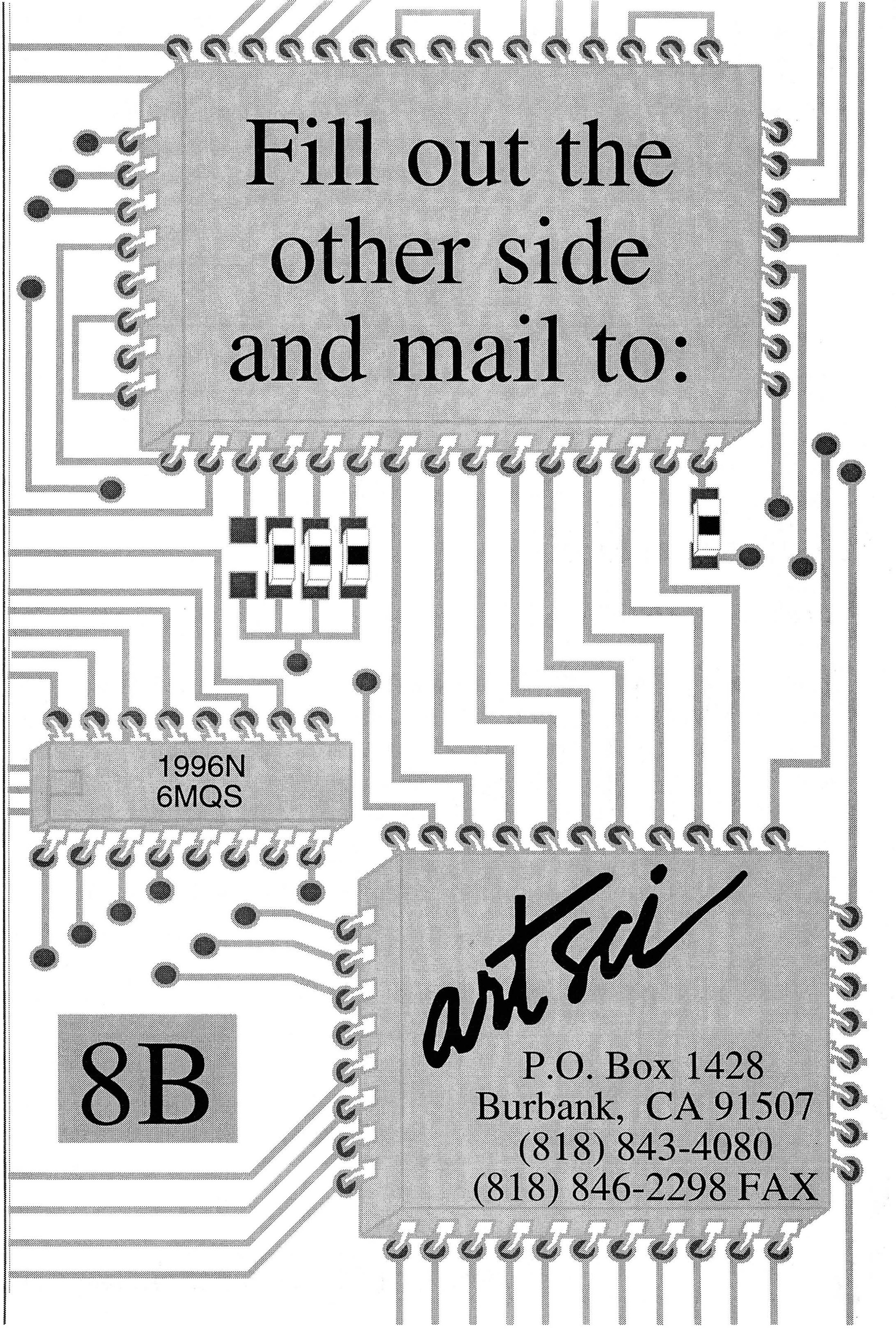
CARD #

EXP DATE

Give us your phone number in case we have a problem processing your order.

☐ CHECK ENCLOSED

☐ VISA / MasterCharge / DISCOVER / AMERICAN EXPRESS


Fill out the other side and mail to:
1996N
6MQS
8B
art sci
P.O. Box 1428
Burbank, CA 91507
(818) 843-4080
(818) 846-2298 FAX

Phone Support

Proof of Purchase

8B

Radio/Tech Modifications

Return this form (NO PHOTOCOPIES) to artsci inc.

NAME ______________________________

ADDRESS ______________________________

CITY ____________________ ST_____ ZIP__________

PHONE ( ) - ______________________________
Optional

Date Purchased ____________________

Purchased from ______________________________

Phone Support will only be provided to verified owners of this book. When this form must be filled out and mailed to ARTSCI, your name and information will be added to our data base. When you call, we will verify that you are on file before any support is given. Verification may not be transfered to any other person.

- [ ] Please send any additional material that becomes available.
- [ ] Please DO NOT send any mailings.
- [ ] Send information about this radio if it becomes available.

____

____

- [ ] I want the next version of this book when it becomes available in November 1996. Ship it to me and charge my card at that time.

Visa #____________________________exp.________

Signature____________________________Date________

Cut on dotted line

This edition contains modifications for:

ALINCO

ALD-24T	∞•
ALR-22	∞•
DJ-100	∞•
DJ-110	∞•
DJ-112	∞•
DJ-119	∞•
DJ-120	∞•
DJ-160	∞•
DJ-162	∞•
DJ-180	∞
DJ-191	∞•
DJ-460	∞•
DJ-500	∞•
DJ-560	∞•
DJ-580	∞•
DJ-582	∞•
DJ-F1T	∞•
DJ-G1T	∞
DJ-G5T	∞
DR-130	∞
DR-150	∞•
DR-430	∞
DR-510	∞•
DR-570	∞•
DR-590	∞•
DR-592	∞•
DR-599	∞•
DR-600	∞
DR-610	∞•
DR-1200	•
DR-M06	∞•
DX-70	∞•

STANDARD

C-108A	∞
C-158	∞
C-168A	∞
C-168S	∞
C-188	∞
C-228	∞
C-468A	∞
C-468S	∞
C-488	∞
C-508	∞
C-528	∞
C-558	∞
C-568	∞
C-628	∞
C-1208	∞
C-5608	∞
C-5718	∞
PACKET	

CB radios

Cobra	President
Realistic	Raider
Alaron	Ranger
Audiovox	R C A
Browning	R C I
Clarion	Regency
Colt	Robyn
Convoy	Royce
Courier	Sanyo
Craig	S B E
Dak	Sears
Fannon	Siltronics
Fuzzbuster	Sharp
G E	Superstar
Gemtronics	Teaberry
Hy-gain	Tenna Phase
JC Penny	Tram
Johnson	Truetone
Kraco	Uniden
Layfayette	VTAC
Midland	Vector
Mopar	Wards
Pace	Whistler
Palomar	Xtal
Panasonic	Zexon
Pearce Sim	

OTHER

ADI

AT-200	∞
AT-400	∞

AZDEN

AZ-21	∞
AZ-61	∞
PSC-6000	∞
PSC-7000	∞
PSC-7500	∞

HEATH

SB-1400	∞

KDK

KDK-240	∞
KDK-2033	∞

RADIO SHACK

HTX-100	∞

RANGER

AR-3300	∞
AR-3500	∞

RCI

RCI-2950	∞
RCI-2970	∞

SENDER

TR-450	∞

TEN TEC

PARAGON	∞

UNIDEN

HR-2500	∞
HR-2520	∞
HR-2600	∞

YAESU

FT-10	∞	FT-747	∞
FT-11	∞	FT-757	∞
FT-23	∞•	FT-767	∞
FT-26	∞•	FT-811	∞•
FT-33	∞•	FT-815	∞•
FT-40	∞	FT-816	∞•
FT-41	∞	FT-840	∞
FT-51	∞	FT-890	∞
FT-73	•	FT-900	∞
FT-76	∞•	FT-990	∞
FT-209	∞•	FT-1000	∞
FT-211	∞•	FT-2070	∞
FT-212	∞•	FT-2200	∞
FT-227	∞•	FT-2311	∞
FT-290	∞•	FT-2400	∞
FT-311	∞•	FT-2500	∞
FT-411	∞•	FT-4700	∞•
FT-415	∞•	FT-5100	∞•
FT-416	∞•	FT-5200	∞•
FT-470	∞•	FT-6200	∞•
FT-530	∞	FT-7400	∞•
FT-650	∞	FT-8500	∞
FT-709	∞•	FL-7000	∞
FT-711	∞•	NC-29	
FT-712	∞•	NC-42	
FT-727	∞•	FT-ONE	
FT-736	∞	TNC	

HEATH

H-2 Mini HT
H4-HT
HW-24
HW24HT
SB-1400

∞ Frequency Expansion
• Alignment controls

8B

artsci

ISBN 0-917963-18-0
51995
9 780917 963186